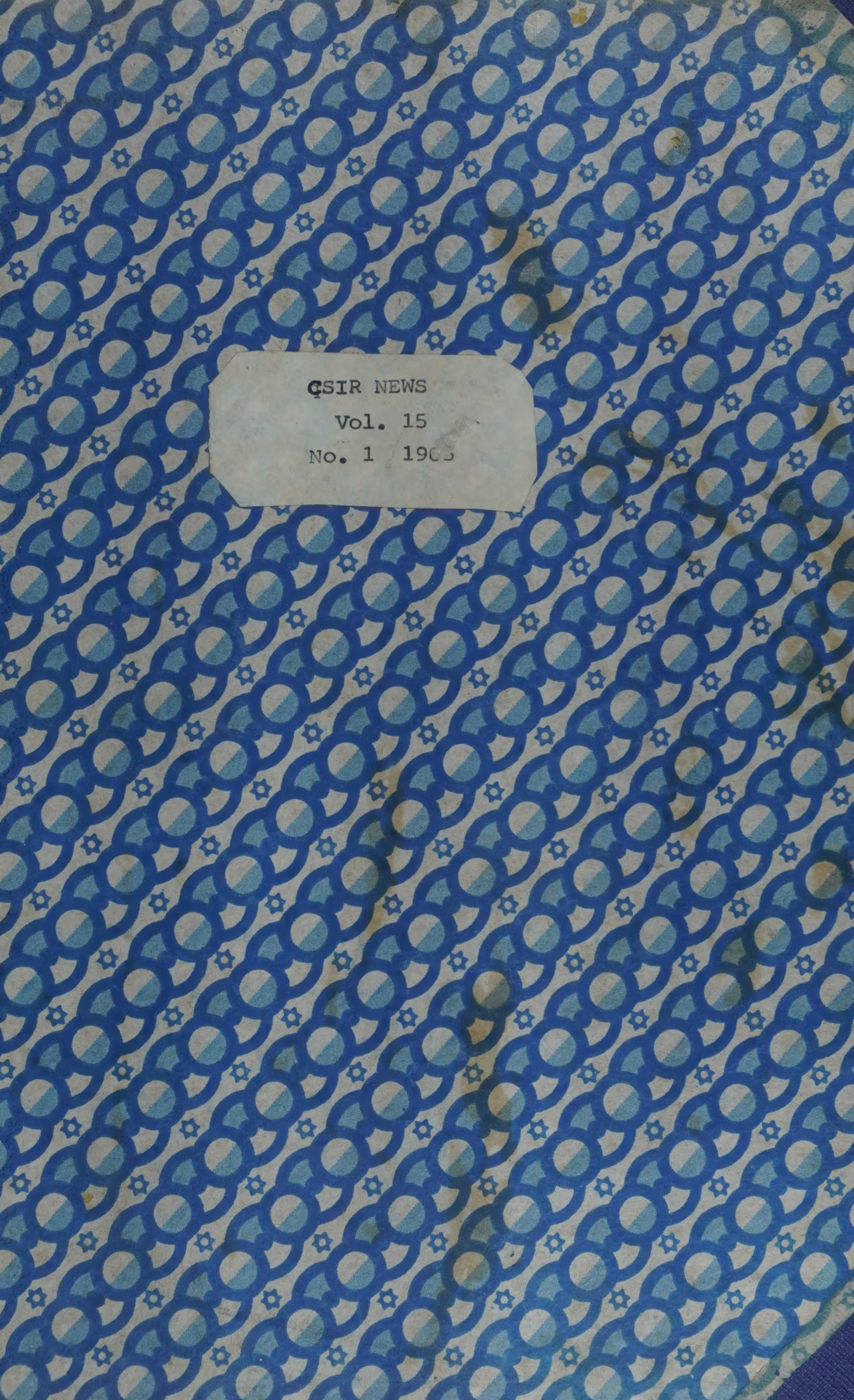

CSIR NEWS
Vol. 15
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CSIR NEWS

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TECHNOLOGICAL RESEARCH
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Krishnan Memorial Lecture and Open Day at NPL

Dr K.R. Ramanathan, Director, Physical Research Laboratory, Ahmedabad will deliver the Krishnan Memorial Lecture on Jan. 21, 1965 at 3.00 P.M. in the NPL Auditorium, New Delhi.

An Exhibition highlighting the scientific activities of the laboratory has also been arranged. It will be open for public on Jan. 22, 1965 which has been declared an 'Open Day'.

Indo-Swiss Training Centre, CSIO

Shri M.C. Chagla, Union Minister for Education and Vice-President, CSIR, inaugurated the School Building of the Indo-Swiss Training Centre of the Central Scientific Instruments Organisation, Chandigarh on Dec. 19, 1964.

Speaking on the occasion, Shri Chagla paid touching tributes to the late Prime Minister, Shri Jawaharlal Nehru, who, just one year ago, had inaugurated the Workshop Building of this Centre. He thanked the Swiss Foundation for providing liberal aid for establishing this Centre for training of Precision Mechanics, which is the only one of its kind in India. He emphasised the need for encouraging training of students after higher secondary stage in such Institutes and added that India would be needing a large number of such Institutes in the near future.

Earlier, Dr P.S. Gill, Director, CSIO, highlighted the progress made by the Centre and other branches of CSIO during the past one year of its active existence towards making India self-reliant in scientific instruments and announced that training in specialized fields of instruments technology would be started as soon as the laboratories of CSIO moved into the permanent buildings.

CSIO, Chandigarh—Shri M. C. Chagla, Union Education Minister and Vice-President, CSIR examining the spherometer, designed and fabricated in the Optics Laboratory of the Organisation. Dr P.S. Gill, Director, is on the extreme left.

RESEARCH PROGRESS

CSMCRI, BHAVNAGAR

Experimental Salt Farm—The first phase of the setting up of an experimental salt farm on 500 acres of land near the old port of Bhavnagar has been completed. It includes construction of approach road, outer bund, partition bunds, central portion bund and eleven crystalliser pans according to the lay-out prepared at the Institute. The manufacturing operation was started on Dec. 19, 1964 with the taking in of high tidal water in the reservoir.

The farm will serve as a demonstration unit and training centre for modern techniques in salt manufacture. Experiments are designed for collection of data at the farm on lay-out of salt works, soil stabilisation in crystalliser pans and improvement in quality and yield of salt produced. Mechanical harvester of salt has been designed and is being fabricated for trial on the farm.

About 75 acres have been reserved in the farm for setting up large pilot plants of the Institute.

CEERI, PILANI

X-band Isolator—An X-band field displacement isolator has been developed using R-4 ferrite, partially filling the RG-52/U rectangular waveguide in the E-plane. Polystyrene spacers have been used to rigidly hold the ferrite slab in position. Metal film fibre glass resistance card of proper shape is fixed to the ferrite slab to strongly attenuate the wave in the back direction, while introducing a negligible loss in the forward direction. The measured performance cha-

(*Contd on p. 4, col.* 1)

BRIEFS

Indian Paint Research Association

The laboratories of the Indian Paint Research Association will start functioning soon in the National Test House, Calcutta. The two rooms, allotted by the Government of India for this purpose, are being equipped.

A Technological/Scientific Advisory Committee has been formed for finding out indigenous substitutes for imported materials and developing low-cost raw materials. Sarvashri P.C. Chanda, C.P.A. Garnett, A.E. Faizullabhoy and Dr S.M. Das Gupta are the President, Vice-President, Treasurer and Secretary of the Committee respectively for the year 1964-65.

RRL, Jorhat

The work of the Regional Research Laboratory, Jorhat (Assam) has now been re-oriented on a projectwise basis. The field of research covers petroleum, natural gas, coal, limestone, forest products, medicinal plants and, general and earthquake engineering. In the field of petroleum, the utilisation of Iomex and modification of the kerosene lamp to utilise inferior grade kerosene are being examined. Investigations on the sludging tendency of diesel oil is also being pursued.

Possibilities of recovery of sulphur dioxide from the flue gases obtained by burning the high-sulphur Assam coals are being examined. A detailed project for establishing a 5-ton/day capacity paper plant utilising the forest wealth of Assam has been worked out and a process for utilising the agricultural waste and tea waste for obtaining hard-boards and chip-boards is being studied. In the field of medicinal plants, the effect of induced polyploidy on the yields of alkaloids is being studied. Work on lime-soil stabilisation and collection of necessary data for earthquake engineering and seismological studies has been taken up.

Seminar on Fuel Economy

Seven scientists of CFRI, Jealgora represented the Institute at a seminar on Fuel Economy, held at Ranchi under the aegis of the Central Committee of Local Productivity Councils in Bihar during Dec. 5-6, 1964 and presented five papers.

An Expert Committee which was formed after the conclusion of the seminar included three scientists of CFRI as members. The committee resolved that an autonomous body called the Fuel Efficiency Service in Eastern India may be established on the lines of Fuel Efficiency Service established by the National Productivity Council in Bombay. The functions of this service, to start with, would be : In-plant survey ; training of plant personnel at different levels ; and Technical information service—dissemination of knowledge of modern techniques and developments in the field of fuel utilization through periodic publication of pamphlets, brochures, memoranda, etc. and also holding of seminars, discussions and conferences.

Puzzolanas—their Survey, Manufacture and Utilisation

A three day symposium on Puzzolanas—their survey, manufacture and utilisation was organised by the Central Road Research Institute, New Delhi commencing on Dec. 18, 1964 [*CSIR News*, **14** (1964), (23)]. The symposium was inaugurated by Shri M.C. Chagla, Union Minister for Education & Vice-President,CSIR and attended by over 250 delegates representing research institutions, Government organisations and industries, including about a dozen from foreign countries such as West Germany, U.K., Ghana. There were four sessions in which various factors involved in the survey, manufacture and uses and utilization of puzzolanas and puzzolanic products with reference to buildings and roads were discussed. In all, about 35 research papers were read and discussed. The following are recommendations made as a result of the deliberations :

1. That the Planning Commission may be requested to convene a meeting of the Ministries of Industries and Commerce, Works and Housing, Irrigation & Power, and also Defence, Railways, Transport, Public Sector Undertakings as well as some connected research organisations, to make concrete proposals to Government for immediate steps to be taken towards the scientific development of various puzzolana resources in the country for use in combination with cement and lime and for development of indigenous machinery for the purpose.

2. That the Ministries of Industries and Commerce may urgently consider the question of up-grading the lime industry in India as a medium scale industry coming under the purview of the Technical Development Directorate of that Ministry. Also, that limestone for use in manufacture of lime should be classified as a 'major' mineral for purposes of lease, etc.

3. That the Ministries of Industries and Commerce may consider ways and means of providing special inducements to the manufacturers, to encourage the rapid growth of puzzolana industry.

4. That the Ministry of Works & Housing may convene a meeting of the representatives of the National Buildings Organization, Central Public Works Department, State Public Works Departments, Railways, Engineering Wing of the Defence Establishment, Indian Standards Institution, etc. including some experts to determine modifications in the existing specifications for masonry, concrete and plaster works, etc. to allow of the use of puzzolana in such works.

5. That the Indian Standards Institution may look into the question of providing necessary standards for proper exploitation of different types of puzzolanas.

6. That further research on puzzolanas, specially in regard to their use in reinforced cement concrete works, should be actively pursued by research laboratories.

Education in Leather Technology

Education in Leather Technology is the title of a 64-page book, brought out by the Central Leather Research Institute, Madras (authors: Y. Nayudamma & P.S. Venkatachalam). The publication is the outcome of a seminar organised by the Institute in January 1964 in which 28 papers were presented and discussed. The book brings into focus ideas necessary for formulating a broad plan for the education of leather technologists for the industry and gives in detail the syllabi and the method of training for courses in leather technology for the benefit of educationalists and industrialists.

Visitors

DR K. L. RAO, Union Minister for Irrigation & Power visited CFRI, Jealgora on Dec. 13, 1964 and the Wind Power Station and the Wind Tunnel Centre of NAL, Bangalore on Dec. 28, 1964.

DR RUSTOM ROY, Professor of Geochemistry and Director of Materials Research Laboratory, Pennsylvania State University, U.S.A. visited CGCRI, Calcutta on Dec. 10, 1964. Dr Roy gave a talk on Recent advances in high pressure physics and chemistry.

MR W. E. JAMES, Australian Specialist at the Optics Section, Physics Department, Indian Institute of Technology, Delhi visited the Optics Laboratory of CSIO, Chandigarh on Dec. 14, 1964.

DR S. HUSAIN ZAHEER, Director-General, Scientific & Industrial Research, SHRI A. K. FAZALBHOY, Chairman of the Executive Council of CSIO, Chandigarh and Members of the Executive Council visited the CSIO laboratories on Dec. 21, 1964.

SIR PAUL GORE-BOOTH, High Commissioner for U. K. in India and MR J. N. MCKELVIE, Principal British Trade Commissioner paid a visit to NML, Jamshedpur on Dec. 15, 1964.

MR A. A. ENTEICHE, Chief of Technical Division, Inter-American Housing Centre (CINVA), Bogota, Colombia visited CBRI, Roorkee on Dec. 2 & 3 1964.

STAFF NEWS

Appointments

SHRI P.T. VARUTE, Pool Officer, NAL, Bangalore (Dec. 26, 1964).

DR A.P. KHATRI, Pool Officer—Scientist, Survey & Planning of Scientific Research Unit, CSIR, New Delhi (Dec. 21, 1964).

DR A. J. MAJUMDAR, Scientist, CBRI, Roorkee (Dec. 1, 1964).

Transfer

DR I.C. CHOPRA, General Manager (Farms), Jammu & Srinagar—Assistant Director-General, CSIR, Secretariat, New Delhi (Dec. 23, 1964).

Resignations

SHRI M.K. SEN GUPTA—Scientist, NAL, Bangalore (Dec. 3, 1964).

SHRI V. SIVANANDA, Pool Officer, NAL, Bangalore (Dec. 22, 1964).

Nominations

DR A. LAHIRI, Director, CFRI, Jealgora—Reappointed as Director on the Board of Directors of the National Coal Development Corporation Ltd, Ranchi.

DR N.K. PANIKKAR, Director, IOE, New Delhi—Member, Central Advisory Board of Biology, Ministry of Education, New Delhi.

SHRI BALDEV SINGH, Industrial Liaison and Extension Officer, CSIR, New Delhi—Member, Rubber Board of the Ministry of Commerce, New Delhi ; Member, National Productivity Council (renomination).

PROF. DINESH MOHAN, Director & SHRI H.M. PANDYA, Architect, CBRI, Roorkee—Members, working group to study the problem of reduction of costs in school buildings, formed by Education Commission.

DR T.J. DEVASSY, Scientist, CLRI, Madras—Member, Leather Advisory Committee, and Implementation Committee of the Gujarat State Khadi Board, Ahmedabad.

SHRI P.S. VENKATACHALAM, Scientist, CLRI, Madras—Essentiality certificate sub-committee (for considering applications for grant of essentiality certificate to tanners), Leather Export Promotion Council, Ministry of Commerce, New Delhi.

SHRI P.N. CHOWDHURY, Scientist, CLRI, Madras—Sub-committee for Trade Disputes (settling trade disputes), Leather Export Promotion Council, Ministry of Commerce, New Delhi.

DR B. L. AMLA, Scientist, CFTRI, Mysore—Member Working Committee to guide the implementation of the Applied Nutrition Programme of the Government of Mysore.

DR K.N. SINHA, Director, CMRS, Dhanbad—Member, Visiting Committee of the Northern Regional Committee of the All India Council for Technical Education, Kanpur.

Deputations

SHRI M.A. RAMASWAMY, Scientist, NAL, Bangalore has been deputed to the Canadian Vickers Ltd. Canada as the Laboratory's representative under the terms of contract for the 4 ft tunnel for a period of five months with effect from Dec. 31, 1964.

DR S. MUKHERJI, Scientist, IIBEM, Calcutta joined duty on Nov. 7, 1964 after a tour of the South East Asian and West Pacific countries, sponsored by the World Health Organisation.

Participation in Seminars & Symposia

SHRI J.C. BANERJEE, Scientist, CGCRI, Calcutta attended the International Geological Congress held at New Delhi.

DR P.K. SAHA, Scientist, CGCRI, Calcutta attended the International Mineralogical Association Conference held at New Delhi.

Honours & Awards

SHRI T.D. BANSAL, Scientist, NPL, New Delhi has been awarded a gold medal by the Institution of Chartered Engineers for his article 'Difficulties of Medical Thermometry Industry in India', published in *Chartered Engineer*, September 1964. Shri Bansal has been adjudged the best writer for the year 1964.

SHRI B.C. SRIVASTAVA, Scientist, CBRI, Roorkee has been elected member of the American Society of Mechanical Engineers (MASME).

* * *

DR MADHAVAN NAIR, Scientist, NCL, Poona, has been recognised as a guide for Ph.D. (Organic Chemistry) by the Poona University.

DR G. NARASIMHAN, Scientist, NCL, Poona has been recognised as a guide for M. Tech. and Ph. D. (Chemical Engineering) by the Bombay University.

DR J. C. SADANA, Scientist, NCL, Poona has been elected President of the Society of Biological Chemists, India, Poona Branch for 1964-65.

SHRI SHIBDAS BURMAN, Senior Research Fellow, CSIR, New Delhi—Fellow, International Lunar Society, England.

Doctorate Awards

SHRI P.S. SHETTY, NCL, Poona—Ph.D. (Bombay University) ; thesis : *Formation of metal complexes in sodium triphosphate solutions* (guide: Dr J. Gupta)

DR R. BHASKARAN, Scientist, CLRI, Madras — Ph.D. (Madras University) ; thesis : *Studies on some biological problems related to leather manufacture.*

NOTIFICATION

It is proposed to appoint a Director for the Structural Engineering Research Centre at the Central Building Research Institute, Roorkee, under the Council of Scientific and Industrial Research. The general scope of work of the Centre will be advanced research in plain and reinforced concrete, prestressed concrete, steel structures, bridge structures, light metal structures, structural dynamics, pre-stressed light-weight concrete, precasting and prefabrication and multi-storeyed buildings. The Centre will also develop a Design Unit for the application of the findings of research.

There is no standard form of application. Those who wish to be considered are invited to send their brief curriculum vitae to Dr S. Husain Zaheer, Director-General, Scientific and Industrial Research. Others who may wish to send nominations for this post may kindly forward their proposals to the Director-General.

All communications will be treated confidentially. Statements and proposals should be received by the Director-General on or before February 28, 1965 at the Office of the Council of Scientific and Industrial Research, Rafi Marg, New Delhi.

RESEARCH PROGRESS

(*Contd from p.* 1, *col.* 3)

racteristics are : Band for isolation (greater than 20 db.) : 8.25-10.1 Gc, (greater than 30 db.) : 8.45-9.9 Gc; Maximum isolation : 38 db. ; Band for insertion loss less than 1 db. : 8.25-9.75 Gc ; Minimum insertion loss : 0.2 db. ; Input VSWR : Less than 1.3 over the band : and Magnetic field : 1450 oersted.

The instrument can be used to isolate the generator from load mismatch effects without consuming power. Work is in progress to further increase the bandwidth for special applications.

CPHERI, NAGPUR

New Technique for Virus Detection—A simple tissue culture method for virus detection in large quantities of water has been developed at the Enteric Virus Research Laboratory, Poona. In this method, the sample of water is incorporated in the concentrated tissue culture medium which provides nourishment to monkey kidney cells grown as mono-layers on glass wall under sterile conditions. Such incorporation of river or tap water does not adversely affect the cells, but facilitates detection of viruses. Further, suspended live cells in such a medium incorporated with minute quantities of viruses in drinking water can also be detected by this method. Using this method, it would be possible to study the effect of various water purification procedures in the removal of virus from polluted water on a water treatment plant scale—B. D. RAWAL & S. H. GODBOLE.

Sponsored Research

Coal Blending & Coking Research—The possibility of blending non-coking coals from the Orissa coal field with washed coals from Jharia coal field for production of metallurgical coke was studied. The results indicated that a maximum of 15 per cent of Hingir Ramour seam coal could be blended with 85 per cent of Dugda washed coal to produce hard coke by selective crushing of the coal blend. Tests carried out with high volatile coals from Raniganj coal field indicated that hard coke could be obtained from the blends containing a maximum of 50 per cent of Poniati seam coal and 50 per cent of Dugda washed coal with the application of 'Sovaco' process.

Pilot oven tests were carried out with the blends containing 50 per cent of Jamadoba washed coal, 40 per cent of Dugda washed coal, 5 per cent of Bhagaband XVI & XVIA seam coal (Jharia coal field) and 5 per cent of Dishergarh seam coal, (Raniganj coal field). The results showed that hard coke suitable for metallurgical purposes could be obtained from these blends.

The results of pilot oven tests carried out with blends of Ghordewa seam coal (Korba coal field), Madhya Pradesh, indicated that a maximum of 15 per cent of this coal could be blended with requisite proportions of Dugda washed coal to produce metallurgical coke ; hard metallurgical coke could also be obtained from the blend containing a maximum of 15 per cent of Jhillimilli coal (Madhya Pradesh coal field) and requisite proportions of Dugda washed coal when the whole blend was crushed to pass 100 per cent through 3 mm.—Coal Blending & Coking Research Sub-Committee, TISCO, Jamshedpur.

Analysis of Man-made Fibre Blends

The Silk & Art Silk Mill's Research Association, Bombay is organising a one-week training course in the analysis of man-made fibre blends for the personnel engaged in the textile industry during Jan. 18-23, 1965. The object is to train the personnel in the identification and analysis of man-made fibre blends for yarns and fabrics made from cotton, wool, cellulosic and synthetic fibres.

PATENTS

Filed

93032 : *An improved process of producing coal fertilizers*—S. Banerjee, R.K. Chakraborti, B.K. Bhattacharya & B.K. Banerjee, CFRI, Jealgora.

95415 : *Improvements in or relating to the production of a concentrate from tamarind fruit pulp*—B.H. Krishna, K.R. Sreekantiah & D.S. Johar, CFTRI, Mysore.

95416 : *Improvements in or relating to the treatment of tamarind pulp for the extraction of useful components*—B.H. Krishna, L.S. Subba Rao & D.S. Johar, CFTRI, Mysore.

96341 : *Improvements in or relating to the production of electrolytic manganese dioxide suitable for primary batteries*—V. Aravamuthan & S. Visvanathan, CECRI, Karaikudi.

Printed and published by Shri S.A. Chari, Editor, Publications & Information Directorate (CSIR), Delhi-12, at Asia Press, Delhi-6.

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Shanti Swarup Bhatnagar Memorial Awards 1960-62

Twelve distinguished Indian Scientists, who have done remarkable researches in the field of Physics, Chemistry, Biology, Engineering and Medicine were presented the Shanti Swarup Bhatnagar Memorial Awards for 1960, 1961 & 1962 by Shri M.C. Chagla, Union Minister for Education & Vice-President, CSIR at a ceremony held at the NPL Auditorium on January 14, 1965. The recipients of the awards were : 1960 awards—Physics : DR M. G. K. MENON, Senior Professor and Dy Director (Physics), Tata Institute of Fundamental Research, Bombay ; Chemistry : DR T.R. GOVINDACHARI; Director, CIBA Research Centre, Bombay ; Biology : DR T.S. SADASIVAN, Director, University Botany Laboratory, Madras ; Engineering : SHRI H.N. SETHNA, Engineering Group, Atomic Energy Establishment, Bombay ; 1961 awards—Physics : DR G.N. RAMACHANDRAN, Director of UGC Centre of Advanced Study in Physics, Madras University, Madras ; Chemistry : DR (MRS) ASIMA CHATTERJEE, Khaira Professor of Chemistry, Calcutta University, Calcutta ; Biology : DR M.S. SWAMINATHAN, Head of the Division of Botany, Indian Agricultural Research Institute, New Delhi ; Medicine : DR R.B. ARORA, Professor of Pharmacology, All India Institute of Medical Sciences, New Delhi; 1962 awards—Physics : DR VIKRAM A. SARABHAI, Physical Research Laboratory, Ahmedabad ; Chemistry : DR S.C. BHATTACHARYYA, Scientist, National Chemical Laboratory, Poona ; Biology : DR B.K. BACHHAWAT, Professor of Biochemistry, Christian Medical College & Hospital, Vellore; and Engineering : SHRI M.M. SURI, Director, Central Mechanical Engineering Research Institute, Durgapur.

Speaking on the occasion, Shri Chagla described the awards as the stamp of appreciation and approval of their talents and pleaded for the creation of a scientific elite in the country. He said that in an egalitarian society, there should not be equality of talents. He hoped that just as Nobel Laureates are recognised throughout the world, our Bhatnagar Laureates would, in course of time, get world recognition.

MEETINGS

A meeting of the Executive Council of the Central Road Research Institute, New Delhi will be held on Feb. 5, 1965 at 3.30 p.m. at the Institute. Maj. Gen. Harkirat Singh, Engineering in Chief, Army Headquarters, will preside.

A meeting of the Chemical Research Committee will be held during Feb. 15-16, 1965 at 10 a.m. in the Conference Room, CSIR Secretariat Building, Rafi Marg, New Delhi.

A meeting of the Pharmaceuticals and Drugs Research Committee will be held on Feb. 19, 1965 at 10.30 a.m. in the Conference Room, CSIR Building, Rafi Marg, New Delhi.

RESEARCH PROGRESS

CBRI, ROORKEE

Good Bricks from Black Cotton-soils—Attempts were made to manufacture bricks of good quality from black cotton soils of Madhya Pradesh without using coal ash which is in short supply.

In the conventional method of brick making, coal ash is used both as an opening material to avoid shrinkage cracks during drying and also as fuel for firing bricks in clamps. Laboratory experiments showed that replacement of coal ash by grog (calcined clay) results in improved quality of bricks. Field trials were also carried out in which coal ash was replaced by grog and the bricks were fired in Bull's kiln using slack coal as fuel. In this experiment, 3.75 lakh bricks were successfully burnt. The quality of bricks obtained was much superior to that obtained by conventional method without any increase in the cost of production—L.C. Jain & P.C. Jain.

NAL, BANGALORE

Digital Computer Design Study for a Transistor Switching Circuit—In the course of development of some wind tunnel control and instrumentation systems, the need arose for a common, universally applicable transistor switching element. In order that the circuit element could be used to operate under a wide range of conditions using indigenous components whose parameters might not be closely controlled, it was decided to consider the worst-case design conditions.

A set of design equations were developed which satisfy the operational requirements of the circuit so that the circuit design could be executed by a systematic search for component values which satisfy these equations.

The computer programme developed is of a very general nature and the result for the worst-case design form a useful starting point for evolving a final design.

RRL, JORHAT

Manufacture of Boards—A process has been developed for the manufacture of chip boards, hard boards and insulation boards utilising bamboo, wood, elephant grass and the like and a binder obtained from tea waste. The pro-

(Contd on p. 4, col. 1)

BRIEFS

INSDOC, New Delhi

Indian Science Abstracts—The first number of the monthly abstracting periodical, Indian Science Abstracts, Vol. 1, has been published. The 126-page publication has 963 entries covering short communications, review and informative articles published in scientific and technical periodicals, proceedings of conferences and symposia, monographs and other *ad hoc* publications, as well as patents and standards. The abstracts are broadly classified according to UDC and arranged under appropriate headings alphabetically by the author's name. The entries are serially numbered and an author index and a keyword index referring to the text by the serial number are given in the end.

Loans for Cultivation of Medicinal and Aromatic Plants

Encouraging cultivation of medicinal and aromatic plants in the country is one of the main functions of the Central Indian Medicinal Plants Organisation, Lucknow. Consequently, the Organisation has finalised a scheme for the grant of loans to private parties. The loans are now given for the cultivation of specific medicinal and aromatic plants at the rate of Rs 200 per acre up to a maximum of Rs 5000 and are returnable within a period not exceeding 15 years. The amount can be utilised even for procurement of equipments required for cultivation. Parties interested in utilising this facility may write to the Director, Central Indian Medicinal Plants Organisation, National Botanic Gardens Campus, Lucknow, for details.

BITM, Calcutta

Quarter-centenary celebrations of Galileo Galilei were held in the Museum on Dec. 29, 1964 under the joint auspices of the Birla Industrial and Technological Museum and the Indian Interplanetary Society.

Film show on the life of Galileo Galilei, a photographic exhibition and a play reading from Brethelt Brecht's drama 'Galileo' were included in the programme. Observation of heavenly bodies through telescope was also arranged for the visitors.

Refresher Course on Leather Inspection

The Central Leather Research Institute, Madras has organised a two-week refresher course on Leather Inspection for Inspection Staff from Customs, Railways, Directorate-General of Supplies & Disposals and other organisations. The course was inaugurated on Jan. 11, 1965.

Gift of Tetronix Hyperspeed Oscillograph to Poona University

The Poona University has received a Tetronix Hyperspeed Oscillograph as a gift from Prof. L. B. Loeb of California University for carrying out researches on Joshi Effect. This effect pertains to the instantaneous decrease of gas discharge current by visible and ultraviolet light. Investigations on Joshi Effect have been sponsored by CSIR for many years and they are at present being pursued at the Poona University by Dr Joshi as a retired scientist under the CSIR Retired Scientists' scheme.

Endurance Tests on Caterpillar Engine

The Indian Institute of Petroleum, Dehra Dun has acquired a Caterpillar Engine for conducting endurance tests on heavy duty lubricants. Each test is of about 5000 hours' duration under carefully controlled conditions after which the wear of engine parts, ring sticking and accumulation of deposits are studied to determine the suitability or otherwise of a heavy duty lubricant. Several tests have already been performed on lubricating oils received from different sources.

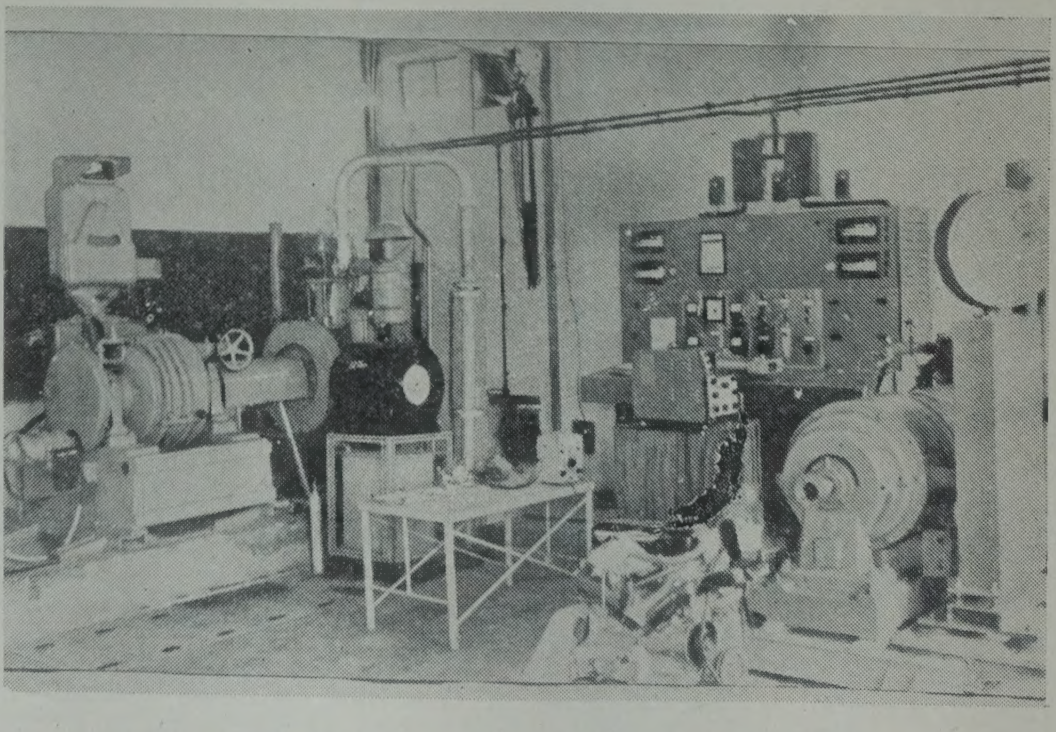
The Institute is now in a position to undertake tests on lubricants on payment.

CECRI Annual Report

The Annual Report of the Central Electrochemical Research Institute, Karaikudi for the year 1963-64 has been published. The report (pp. 84), in its thirteen chapters, briefly reviews the work done in the Institute during the year. It includes research progress, the activities of the Industrial Liaison and Extension; Exhibitions, Seminars & Symposia; Patents, filed, accepted and sealed; Awards and Honours; Deputations; Colloquia; Library/translation; Visitors; Miscellaneous items fabricated, Equipment purchased; Publications; and General Administration.

Technical Service for Industry

The Central Mechanical Engineering Research Institute, Durgapur has recently brought out an illustrated brochure entitled 'Technical Service for Industry'. The brochure (pp. 16) deals with the scope and organisation of the Institute, short



IIP, Dehra Dun—Caterpillar Engine Test Bench descriptions of its various laboratories, the long and short term research projects that it has in hand to solve industrial problems and some of its research projects the impact of which is already being felt in the industry. A list of equipment available in the Institute has been given in the appendix.

Lectures at NCL, Poona

Prof. S. Shibota, Faculty of Pharmaceutical Sciences, University of Tokyo, Japan, delivered a lecture on 'Some chemical studies of fungal products' on Dec. 22, 1964.

Prof. H. C. Brown, Purdue University, U. S. A. delivered a lecture on 'Organoboranes in synthetic chemistry' on Dec. 30, 1964.

Visitors

Mr John Alcock of Hunslet Engineering Group, U. K. visited CMERI, Durgapur on Jan. 4, 1965.

Shri S.K. Patil, Union Railways Minister, visited CMERI, Durgapur on Jan. 5, 1965.

Dr H. R. Ambler, Scientific Adviser to the British High Commissioner to India, visited RRL, Jorhat during Jan. 7-8, 1965.

Shri T. T. Krishnamachari, Union Finance Minister visited the CMERI, Durgapur on Jan. 7, 1965.

Shri Ram Kishan, Chief Minister, Punjab, **Shri V.K. Krishna Menon**, and **Prof. C. Whitworths** of the British Association for Advancement of Science, visited CMERI, Durgapur on Jan. 8, 1965.

Cyclone Relief Fund

The members of the staff of the Indian National Scientific Documentation Centre, New Delhi and the Publications & Information Directorate, New Delhi contributed Rs 275 towards the relief fund for the victims of Rameshwaram cyclone disaster.

STAFF NEWS

Appointments

Drs Bimla Butti & Lalit Kumar Pande—Scientists, NPL, New Delhi (Dec. 1, 1964).

Dr A. J. Majumdar—Scientist, CBRI, Roorkee (Dec. 1, 1964).

Shri G. Jankiraman—Senior Technical Officer, NCL, Poona (Dec. 23, 1964).

Shri C. R. Prasad — Scientist, CDRI, Lucknow (Dec. 28, 1964).

Shri P.N. Chowdhury—Scientist, CLRI, Madras—Scientist, Survey & Planning of Scientific Research Unit, CSIR (Jan. 11, 1965).

Transfers

Shri B.V. Subbarayappa, Editor, Science Reporter—Scientist, Survey & Planning of Scientific Research Unit, CSIR, New Delhi (Dec. 26, 1964).

Shri K. Rajagopalan, Scientist, NAL, Bangalore—Publication & Information Directorate, New Delhi (Dec. 31, 1965).

Retirements

Shri S.L. Nayar, Scientist, CDRI, Lucknow (Jan. 2, 1965).

Shri U.N. Dey, Scientist, CDRI, Lucknow (Jan. 11, 1965).

Nominations

Dr P. M. Bhargava, Scientist, RRL, Hyderabad—Member of the Panel on Control Processes and Molecular Biology, under the International Cell Research Organisation.

Dr A.B. Kar, Scientist, CDRI, Lucknow — Member, Executive Council of the Family Planning Institute, New Delhi.

Dr K. N. Mathur, Scientist Emeritus, NPL, New Delhi—Member, Working Group on Equipment and Scientific Instruments for Educational Institutions, set up by the Planning Commission.

Shri Prem Prakash, Scientist, NPL, New Delhi—Member, Working Group on Verification of Hank Indicators, Yardage Indicators and Pick Counters ; and Sub-Committee for Verification of Coal Tubs, Ministry of Commerce, New Delhi.

Prof. S. R. Mehra, Director, CRRI, New Delhi—Member, Committee of Foundation Engineers, Ministry of Transport, New Delhi.

Nominations : ISI

Shri M. C. Ragavan, Junior Documentation Officer, CRRI, New Delhi—Representative of the Institute, Composition of Structure and Layout of Books and Periodicals Sub-Committee.

Prof. S. R. Mehra, Director, CRRI, New Delhi—Member, General Council and Executive Committee of ISI.

Deputations

Dr Hari Narain, Director, NGRI, Hyderabad attended the Twenty-second International Geological Congress, held at New Delhi during Dec. 14-22, 1964. He was nominated as Chairman and presided during one of the sectional meetings on 'Geological Results of Applied Geophysics'.

Dr N. S. Srinivasan, Scientist, CRRI, New Delhi returned to India on Jan. 1, 1965 after a research study at the University of Brunswick, West Germany for two months (Nov. 1-Dec. 31, 1964).

Shri B.R. Somasekhar, Scientist, NAL, Bangalore has been deputed to Australia for a period of 9 months with effect from Jan. 10, 1965 for training at the Aeronautical Research Laboratories, Melbourne under the U.N. Special Fund Aid Programme.

Dr B.C. Kundu, Scientist, CDRI, Lucknow participated in the Second International Kenaf Conference at Florida during Dec. 8-12, 1964. He also visited the various universities and botanic gardens in U.S.A. in addition to Montreal University, Canada; Tokyo University, Japan and National Cancer Research Centre, U.S.A.

Dr S. Bhattacharji, Scientist, CDRI, Lucknow participated in the second symposium on Medicinal Plants at Kandy (Ceylon) held during Dec. 15-18, 1964.

Doctorate Awards

Shri Mohan Rai, Scientist, CBRI, Roorkee—Ph.D. (Banaras Hindu University) ; thesis : *Physico-chemical aspects of hydraulic lime.*

Shri G.H. Kulkarni, NCL, Poona—Ph.D. (Poona University) ; thesis : *Studies in terpenoids* (guide : Dr S.C. Bhattacharyya).

Shri P.S. Kalsi, NCL, Poona—Ph.D. (Poona University) ; thesis : *Studies in terpenoids* (guide: Dr S.C. Bhattacharyya)

Shri Joseph George, Scientist, CBRI, Roorkee—Ph.D. (Agra University); thesis : *Studies on synthetic resins and their applications to lignocellulosic building materials* (guide : Dr M. U. Malik, Roorkee University).

RESEARCH PROGRESS

(*Contd from p. 1, col. 4*)

cess is being tested on a pilot plant scale.

Pulping of Bamboo—A process has been developed for pulping of bamboo at normal pressures for use in the paper industry. This is a departure from the conventional process in which bamboo chips are digested under high pressures. The process is being worked out on a pilot plant scale.

IIP, DEHRA DUN

CFR Correlation Scheme — A scheme to correlate the results of tests on gasolene performed by different laboratories was taken up on the recommendation of the Indian Standards Institution. The aim is to determine statistically if variations occur when the same test is performed by different laboratories on the same sample of gasolene. Thirteen laboratories of government departments, universities, public sector refineries and private oil companies are participating in this scheme with the Institute acting as co-ordinator. The standard samples for these tests are prepared by the Institute and sent to the participating laboratories. The results of the analysis of the samples by each laboratory indicate that : (i) the samples supplied to the laboratories were homogeneous and (ii) the tests are valid if performed in the prescribed manner. However, the standard deviation was high in the case of Octane. Number determinations by both Motor and Research Method.

CMERI, Durgapur

The Institute welcomes requests for advice or information from the industry for any mechanical engineering problem. The Institute also undertakes experimental and design investigations in special cases in collaboration and/or under contract. All enquiries may be addressed to the Director, Central Mechanical Engineering Research Institute, Mahatma Gandhi Avenue, Durgapur-9.

PATENTS

Filed

97003 : *Improvements in or relating to the electrolytic production of high quality fine grade silver powder*—P.B. Mathur & N. Karuppannan, CECRI, Karaikudi.

97004 : *Improvements in or relating to the soldering of magnesium*—T.S. Srinivasan & P.B. Mathur, CECRI, Karaikudi.

97005 : *Improvements in or relating to electrodeposition of black chromium plating*—B.A. Shenoi, K.S.S. Indira & S. Gowri, CECRI, Karaikudi.

97123 : *A safety device for cages or lifts in case of winding rope breakage*—B. Singh & R.K. Prasad, CMRS, Dhanbad.

97190 : *Improvements in or relating to extraction or similar processes*—C.M. Shah & G. Narsimhan, NCL, Poona.

97244 : *Improvements in or relating to toggles for straining leather for drying-Type-A* — K. S. Rao, CLRI, Madras.

97245 : *Improvements in or relating to toggles for straining leather for drying-Type-B.* — K. S. Rao, CLRI, Madras.

U.K.

44794/64 : *A microscope eyepiece graticule for rapid determination of specific surface of particulate materials* — S. Guruswamy, CMRS, Dhanbad.

327/65 : *Preparation of polyurethane printing rollers*—N.D. Ghatge & S.L. Kapur, NCL, Poona.

West Germany

C. 33 807 IVb/12 o : *Preparation of saturated, unsaturated hydroxy fatty alcohols by hydrogenolysis*—A.J. Pantulu, K.T. Achaya, G.S. Sidhu & S.H. Zaheer, RRL, Hyderabad.

C 33 808 IVb/12 o : *Direct preparation of wax esters by fatty acids hydrogenolysis*—A.J. Pantulu, K.T. Achaya, G.S. Sidhu & S.H. Zaheer, RRL, Hyderabad.

Accepted

85789 : *Utilization of groundnut shells for the manufacture of high alpha cellulose dissolving grade pulp*—G.M. Vyas, D.S. Bendale, M.B. Mahajan, J.L. Bose, B.D. Modi, H.R. Sonawane & D.C. Bigg, NCL, Poona.

95075 : *Utilization of groundnut shells for the manufacture of vanillin*—G.M. Vyas, D.S. Bendale, M.B. Mahajan, J.L. Bose, B.D. Modi, H.R. Sonawane & D.C. Bigg, NCL, Poona.

95076 : *Improvements in or relating to the manufacture of lignin*—G.M. Vyas, D.S. Bendale, M.B. Mahajan, J.L. Bose, B.D. Modi, H.R. Sonawane & D.C. Bigg, NCL, Poona.

87434 : *A process for the production of well bleached and cross-linked tannery wool, hair and other keratinous fibres*—S.K. Barat, CLRI, Madras.

87815 : *A process for the manufacture of strapping tapes which can be used as a substitute for steel straps for boxes, bales and similar packages*—P. Veerraju, B. Anandaswamy, N.V.R. Iyengar & A. Sreenivasan, CFTRI, Mysore.

87991 : *Preparation of saturated, unsaturated and hydroxy fatty alcohols by hydrogenolysis*—A.J. Pantulu, K.T. Achaya, G.S. Sidhu & S.H. Zaheer, RRL, Hyderabad.

Switzerland

383993 : *Production of 4-hydroxycoumarin and its derivatives*—V.R. Shah, J.L. Bose & R.C. Shah, NCL, Poona.

Sealed

83874 : *A process for the treatment of fish body oil*—M.R. Verma, V.D. Puri & J. Rai, NPL, New Delhi.

Spain

298691 : *Processing of dry, ready to wet sausage casings from cattle, goat, sheep, pig and other mammalian intestines* — S.K. Barat, CLRI, Madras.

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R.N. 4212/5

CSIR NEWS

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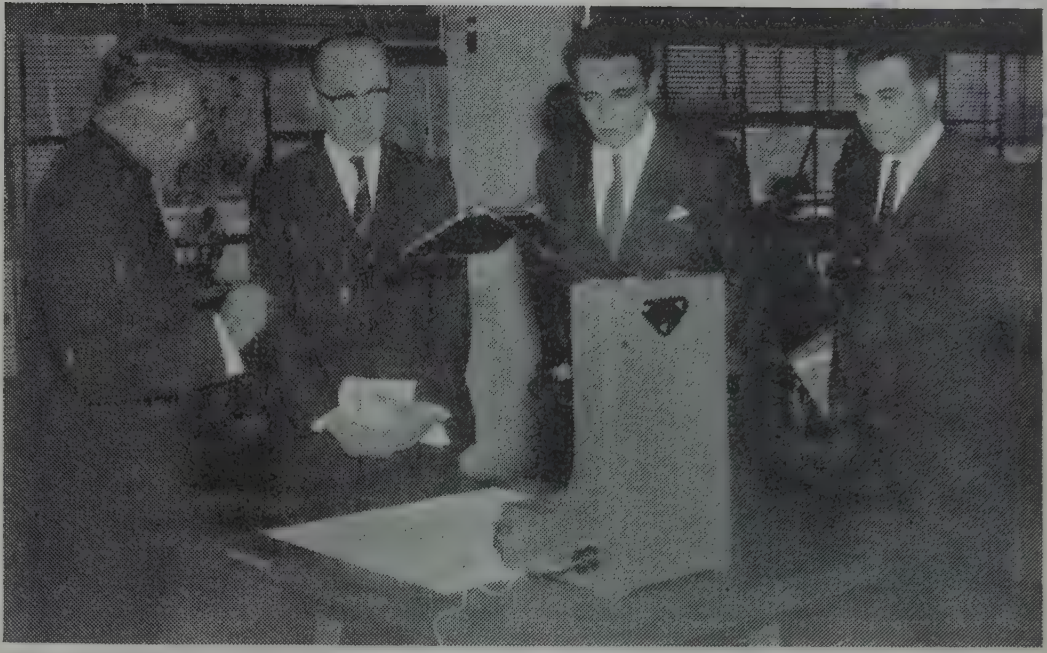
UNESCO Director-General Visits INSDOC

M. Rene Maheu, Director-General, UNESCO, visited Insdoc, New Delhi on Feb. 5, 1965. He went round the various sections of Insdoc and showed considerable interest in the activities of the Centre, especially the Indian Science Abstracts and the Insdoc List of Current Scientific Literature. In a Press Conference held that evening, M. Maheu mentioned specifically the Insdoc, set up for the dissemination of scientific information as one of the most successful major Unesco undertakings in India.



Insdoc, New Delhi—Mr Rene Maheu (second from left) observing the working of the micro film reader manufactured at the Ordnance Factories in India, during his visit. Also seen in the picture are Shri B.S. Kesavan (extreme left), Mr P.C. Terenzio, Director, Bureau of Member States, Unesco, and Dr. A. Evstafiev, Director, Unesco, SASCO, New Delhi.

MEETING

The Annual meeting of the Physical Research Committee will be held on Feb. 27, 1965 at 3.00 p.m. in the University Grants Commission Building, Bahadur Shah Zaffar Marg, New Delhi.

Shri S.B. Deshaprabhu

Shri S.B, Deshaprabhu, Scientist, Publications & Information Directorate took over as Scientist-incharge of the Directorate in addition to his own duties with effect from February 11, 1965.

NPL Completes 15 Years

The National Physical Laboratory, New Delhi—second in the chain of national laboratories set up by the CSIR in 1950, completed 15 years of its existence on Jan. 21, 1965. The occasion was marked by arranging the Krishnan Memorial Lecture. The speaker was Dr. K.R. Ramanathan, Director, Physical Research Laboratory, Ahmedabad. Other activities in this connection included an exhibition highlighting the achievements of the laboratory in the fields of Industrial physics, Time & Frequency, Infrared Spectroscopy, Rain & Cloud Physics, Solid State Physics, Electronics etc. etc. January 22, 1965 was declared 'Open Day' for the public. The exhibition attracted a large number of visitors. A folder giving a description of the exhibits on display and two brochures, one in English and the other in Hindi, on 'Fifteen Years of NPL' were also published on this occasion. The English brochure (pp. 70) contains a general review of NPL, applied research carried out, pilot plants set up, basic research, standards and testing and technical services available at the laboratory, number of papers published, patents taken, number of test certificates issued, etc. etc.

RESEARCH PROGRESS

CRRI, NEW DELHI

Bamboo-Reinforced Cement-Soil as Construction Material :—Due to reasonably high tensile strength of Bamboo (about 13000 psi), and the fact it could be used for reinforcing a material of comparatively low modulus of elasticity, work has been carried out on bamboo-reinforced cement-soil as a new composite material. Even though the modular ratio between bamboo and cement-soil is not very high (only 2 to 3), this small ratio combined with the cheapness of cement-soil itself can be made use of in appreciably bringing down the cost of certain types of foundation structures, such as, road bases and flexible rafts. Hence, studies were initiated with the following objectives:

(i) To treat bamboo in such a way that the excessive swelling and shrinking properties would not as a result affect its bond with cement-soil; (ii) to make bamboo resistant to fungus and termite attack, (iii) to produce a high bond strength between cement-soil and bamboo; and (iv) to determine the minimum cover and spacing of bamboo reinforcement, so as to eliminate cracking during the period of curing.

Reasonably acceptable answers to the above problems have been found and experimental sections also have given encouraging results.

(*contd. on p. 4, col. 1*)

BRIEFS

CSIR Grant for Microanalytical Laboratory

The Council of Scientific and Industrial Research has sanctioned a grant of Rs 15,000 to the Bose Institute, Calcutta for setting up a Microanalytical Unit at the Institute. The grant is to be utilised for the purchase of equipment such as furnaces with accessories for C, H, and N determination, balance, apparatus for O—Me, —O—CO—CH_3 determination and miscellaneous accessories. The facilities for microanalysis will be available for all research workers on payment of reasonable fee. The staff requirements of the unit are expected to be met by the Institute.

It may be mentioned that a survey of the facilities available in the country for microanalytical work was carried out last year by the Publications and Information Directorate at the instance of the Director-General, Scientific and Industrial Research. The survey indicated that most of the research organizations undertake microanalytical work only for their own purpose, and as a result research workers were greatly handicapped. With a view to meeting the pressing need for adequate microanalytical facilities in the country, the Bose Institute had made a proposal to set up a microanalytical laboratory with substantial capacity for outside work, provided sufficient financial assistance was given by CSIR. The Chemical Research Committee considered the proposal at its meeting held on Aug. 21 and 22, 1964 and recommended to CSIR for a grant to the Institute for setting up a microanalytical unit. The recommendation was accepted by the Director-General, Scientific and Industrial Research and accordingly the above grant has been made available to the Institute.

PID Executive Council

The Executive Council of Publications & Information Directorate (PID), New Delhi has been reconstituted with Dr. C.D. Deshmukh as *Chairman.* The following are the members : Dr M.S. Randhawa, Prof. D.S. Kothari, Dr B.R. Seshachar, Shri Shankar Pillai, Shri J.P. De Souza, Prof. A.R. Vasudeva Murty, Shri A. Rahman, Dr B.V. Raghavendra Rao, Dr Nihar Ranjan Ray, MP, Director, PID, Financial Advisor to CSIR and Director-General, CSIR

Insdoc Executive Council

The Executive Council of Indian National Scientific Documentation Centre (Insdoc), New Delhi has been reconstituted with Dr. C.D. Deshmukh as *Chairman* The following are the members : Prof. T.R. Seshadri, Dr N.V. Subba Rao, Brig. B.M. Chakravarty, Prof. P. Maheshwari, Col. B.L. Taneja, Development Commissioner, Small Scale Industry, New Delhi, Shri A. Das Gupta, Shri K.A. Issac, Shri M.H. Razvi, Syed Basiruddin Ahmed, Dr V.M. Raghunath, Dr B.V. Raghavendra Rao, Dr Nihar Ranjan Ray. M.P., Director-General Scientific & Industrial Research, Financial Adviser to CSIR and Director, Insdoc.

Research and Industry Editorial Board

An Editorial Board for Research and Industry has been constituted for the first time with the following members : Director, PID, Shri Baldev Singh, Dr. J. Dubashi, Dr. S. Ganguly, Dr. H.R. Nanji, Shri A. Rahman, Dr. T. S. Subramaniam, Shri M. A. Wadud, and Shri S. A. Chari (Editor). The first meeting of the Board was held on Jan. 15, 1965 in New Delhi.

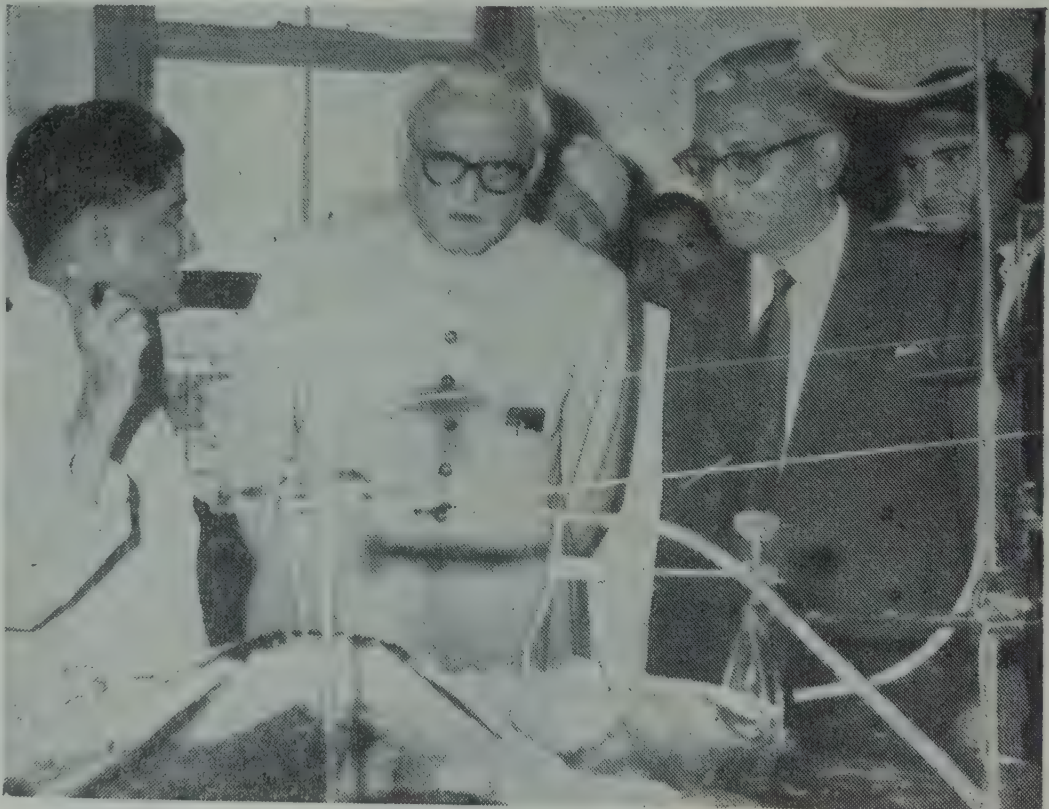
RRL, Jammu

Shri M.C. Chagla, Union Education Minister and Vice-President, CSIR, visited RRL, Jammu on Jan. 28, 1965. He was taken round the various sections of the laboratory by the Director, Dr. K. Ganapathi. In his brief address to the staff, he stressed the need to exploit the rich forest, mineral and medicinal resources of the State for its prosperity.

Noise and Its Control

Noise is a by-product of civilisation. Industrial growth in cities has brought in its wake noisier machines for production and transport. On the other hand modern living has packed us together in crowded cities and industrial towns where economy in building construction has given rise to lighter walls and partitions with consequent loss in insulation against noise.

The problem of control of noise both in industrial and in residential



RRL, Jammu—Shri M.C. Chagla, Union Education Minister and Vice-President, CSIR watching a pharmacological experiment in progress on an anaesthetized dog, Dr K. Ganapathi, Director, is on the extreme right.

areas is being tackled scientifically by the Central Building Research Institute, Roorkee. The Institute has recently brought out two leaflets : Building Digests Nos 32 and 33 dealing with Noise and its Control, Part I—Community noise and Part II—Industrial noise. In these digests recommendations have been made on the control of community and industrial noise.

Visitors

Dr Peter Lazar, UNESCO Expert on Documentation and specialist in Industrial Economics, visited the CECRI, Karaikudi, together with Mrs Lazar, on Jan. 11, 1965. He later addressed the staff of the Institute, on 'Energy Economics'.

Dr W.H. Sebrell, Chairman, Protein Advisory Group of WHO/FAO/UNICEF, Mr N.W. Pirie, Head of the Biochemistry Department, Rothamsted Experimental Station, Harpenden, England and Dr Nevin S. Scrimshaw, Professor of Nutrition and Head of Department, Massachusetts Institute of Technology, U.S.A. visited CFTRI, Mysore, on Jan. 5, 8 and 15, 1965 respectively.

The three eminent scientists held two seminars each. Dr Sebrell spoke on the differences in the way the human body metabolises medium chain and long chain fatty acids and on protein malnutrition in the pre-school child. Mr Pirie, describing the design of a plant that would produce one ton of leaf protein per day, cited experimental results to show that leaf protein is very close to the FAO reference protein. Dr Scrimshaw in two discussions on "Factors influencing human protein and amino acid requirements" and "The synergism between malnutrition and infectious diseases" examined data collected at INCAP on treatment of kwashiorkor with plant protein and covered many controversial points concerning protein quality, public health measures and child feeding experiments.

CMRS, Dhanbad

Shri N. Sanjiva Reddy, Union Minister for Steel and Mines, accompanied by Prof. P.R. Chakravarty, Member of Parliament, visited CMRS, Dhanbad on Jan. 21, 1965. Dr K.N. Sinha, Director of the Research Station, conducted them round different sections and acquainted the Minister with the various research and technical contributions the CMRS has made, such as in improving the efficiency, safety and health aspects of mining methods, equipment and of mine workers.

STAFF NEWS

Appointment

Shri R.K. Mukherjee—Scientist CMERI, Durgapur (Jan. 1, 1965).

Dr A.C. Shamichoke—Scientist CMERI, Durgapur (Jan. 5, 1965).

Shri N.C.F. Shah—Pool officer, CMERI, Durgapur. (Dec. 15, 1964).

Nomination

Dr B.L. Amla, Scientist, CFTRI, Mysore—Government Director on the Board of Directors of the Mysore Fruit Products Ltd, Government of Mysore.

Nominations ISI

Dr B.L. Amla, Scientist, CFTRI, Mysore—Member, (1) Composition of the ad-hoc panel for Tin Coating for Vanaspathi, Tin CDC :28:3:31, and (2)Composition of Fresh Fruits Sub-Committee, AFDC 23:1.

Major N.V.R. Iyengar, Scientist, CFTRI, Mysore—Member, Polyethylene Film and Laminates Sub-Committee, CDC 17:8.

Shri M.R. Chandrasekhara, Scientist, CFTRI, Mysore—Member, Composition of the Methods of Test for Dairy Products Sub-Committee, AFDC 12:4.

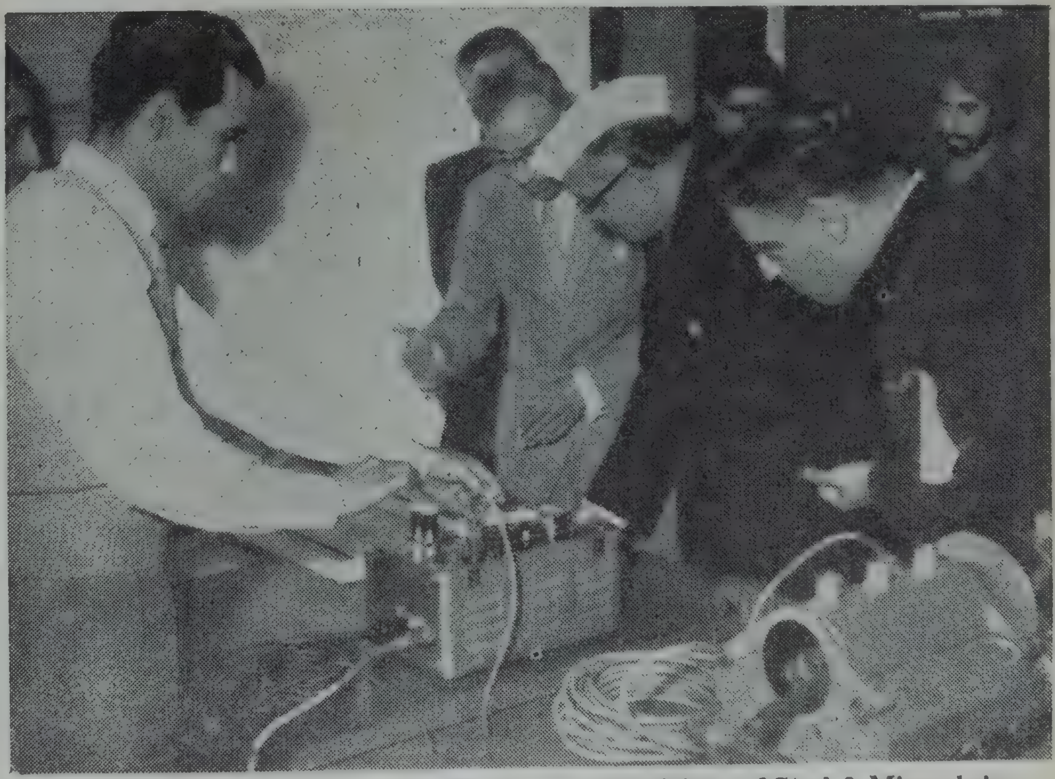
Dr G.S. Siddappa, Scientist, CFTRI, Mysore—Member, Open Top Sanitary Can, CDC 28:3:1.

Shri P. Veerraju, Scientist, CFTRI, Mysore — Member, (1) Composition of Packaging Order Sub-Committee, (2) Glass-ware Sectional Committee, CDC 10 and (3) Fibre Board and Fibre Board Containers Sub-Committee, CDC 45:3.

Deputations

Dr H.A.B. Parpia, Director, CFTRI, Mysore, attended the International Conference on Prevention of Malnutrition in the Pre-School Child, held under the auspices of U.S. National Academy of Sciences and National Research Council, at Washington D.C. from December 7-12, 1964.

Shri D.M. Rao, Scientist, NAL, Bangalore, returned to India on Jan. 19, 1965 after completion of his assignment with the Canadian Vickers Ltd. under the terms of contract for the supply and erection of the 4-ft. Wind Tunnel.



CMRS, Dhanbad—Shri N. Sanjiva Reddy, Union Minister of Steel & Mines, being shown the Electrical Defectrograph.

RESEARCH PROGRESS

(*Contd from p. 1, col. 3*)

It has been inferred that bamboo cement-soil combination bonded either with thin cement concrete wearing surface or a suitably designed bituminous overlay can be used as substitute for the conventional heavy duty pavement. This will save cost of road making by 25-30 per cent.

CSMCRI, BHAVNAGAR

Plaster of Paris Bandages :—A process has been worked out for the production of plaster of Paris bandages using plaster prepared from marine gypsum. A continuous coating, drying and winding unit has also been developed for this purpose. The process consists of preparing a slurry of plaster of Paris in the presence of a suitable adhesive, applying a coating of the slurry on cotton gauze and driving out the liquid by heat. The quality of the bandage thus obtained is quite satisfactory for both dry and wet strength. The process is ready for exploitation.

NAL, BANGALORE

Analysis of Plates—Plates form an important structural element and several methods have been applied to study the effect of loads on these. Although analytical methods using trigonometric series have been used, the solution of the differential equation in the case of plates with cut-outs, encountered in practical designs, is rendered difficult because of the boundary conditions. The finite difference approximation to the plate equation offers a useful tool in solving relatively complicated problems. The Moire method is handy in determining the slopes from which deflections are obtained by integration and curvatures by differentiation.

Hence, studies were undertaken on the moments and deflections in simply supported square plates with cut-outs by the Moire method and the finite difference analysis. The studies have shown that the Moire method gives a solution 5-12 per cent less than that by finite difference analysis. The effect of cut-out uniformly extends to a distance from the cut-out slightly greater than its size and the size has little effect on the maximum moment and deflection unless it exceeds a quarter of the plate span.

PATENTS

Filed

96133: *Anodic phosphating*—K.S. Rajagopalan & B. Dandapani, CECRI, Karaikudi.

96423: *Improvements in or relating to a device for the sharpening of razor blades*—M.A.V. Devanathan, V.K. Venkatesan & S. Sarangapani, CECRI, Karaikudi.

96605: *Improvements in or relating to spray drying technique with special application to electrolytic recovery of magnesium, misch metal and the like*—G. Janakiraman, P.S. Desikan & V. Aravamuthan, CECRI, Karaikudi.

96660: *Improvements in or relating to lightning arrester/surge diverter*—M.A.V. Devanathan, V. Rangachari, R. Radhakrishnan & K.S.G. Doss, CECRI, Karaikudi.

96661: *A novel method of separating iron from ilmenite and its application in the upgrading of ferruginous ores*—(Miss) Shipra Samanta, V. S. Sampath & P. P. Bhatnagar, NML, Jamshedpur.

96662: *Improvements in or relating to etching and decorative anodising of aluminium and its alloys*—B.A. Shenoi & (Miss) K.S.N.S. Indira, CECRI, Karaikudi.

96663: *A new process for the manufacture of glycolic acid*—H.G. Vartak & S.G. Patil, NCL, Poona.

96690: *Improvements in or relating to direct plating of copper on aluminium and aluminium alloys*—B.A. Shenoi, R. Subramanian, C. Balasingh & C. Lakshminarayanan, CECRI, Karaikudi.

96691: *Improvements in or relating to electro-deposition of chromium-molybdenum alloys*—B.A. Shenoi & (Miss) K.S.N.S. Indira, CECRI, Karaikudi.

96710: *A process for the treatment of styrene pitch*—B.C. Mazumdar, CRRI, New Delhi.

96801: *A new method for the improvement in the figure of merit of thermoelectric materials*—K.S.V.L. Narasimhan & K.P. Sinha, NCL, Poona.

97000: *A process for treating cellulosic textile material to impart simultaneously high dry crease recovery, high wet crease recovery and high abrasion/tear resistance*—V.B. Chipalkatti, R.M. Desai, N.B. Sattur & Iftikhar Hussain, Shri Ram Institute for Industrial Research, Delhi.

97001: *Improvements in or relating to the electrolytic reduction of o-nitrophenol to o-aminophenol*—H.V.K. Udupa, G.S. Subramanian & P.N.A. Raman, CECRI, Karaikudi.

97002: *Improvements in or relating to the electrolytic reduction of nitrobenzene to p-phenetidine*—H.V.K. Udupa, G.S. Subramanian & P. Subbiah, CECRI, Karaikudi.

96342 : *Improvements in ice point apparatus for thermocouples, thermometers and the like*—V. P. Wasan & T.D. Bansal, NPL, New Delhi.

96422 : *Improvements in or relating to the manufacture of benzoic acid from benzotrichloride*—I.K. Kacker, G.S. Sidhu, H. Dakshinamurty & S.I. Ahmed, RRL, Hyderabad.

96606 : *Improvements in or relating to preparation of lithographic aluminium plates*—B.A. Shenoi, R. Subramanian & S. Chakrapani, CECRI, Karaikudi.

96709 : *Improvements in or relating to the production of misch metal*—V. Aravamuthan, K. Venugopalan & T.P. Madhavan, CECRI, Karaikudi.

Accepted

86823 : *A new process for the production of nitrogenous fertilizers and soil conditioner from coal lignite and peat*—P.N. Mukherjee, J.N. Bhaumik & A. Lahiri, CFRI, Jealgora.

87529 : *A process for separation and isolation of lecithin from* Pithecolobium dulce *seed*—S. K. Nigam, C. Mitra & K.N. Kaul, NBG, Lucknow.

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R.N. 4212/5

CSIR NEWS

VOL. 15 FEB. 28, 1965 : PHALGUN 9, 1886 NO. 4

16·3-65

French Prime Minister Visits NPL

Mr Georges Pompidou, Prime Minister of France visited NPL, New Delhi on Feb. 10, 1965. At a reception held in his honour, Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, referred to the notable contributions France has made in pure and applied sciences and engineering and said that India derived much inspiration from eminent French scientists and engineers. Dr Zaheer recalled the assistance that India has been receiving from France in its scientific and industrial development, through the French Technical Cooperation Scheme and other organizations. He particularly mentioned the close collaboration between CSIR and the French Institute of Petroleum since 1960, towards the establishment of the Indian Institute of Petroleum at Dehra Dun. He thanked the President of the French Institute of Petroleum and the French experts for their assistance in developing the Institute at Dehra Dun.

Mr Pompidou in his address said that he felt honoured for the reception given to him by the scientists who are the elite of a country. Emphasizing the importance of science, not only for the industrial development of a country but also for human welfare, he remarked that since 1958 France has been giving more importance to scientific research and the budget of the Ministry of Scientific Research has been multiplied 10 times. His visit to NPL was a proof of his interest in science.

Mr Pompidou was later taken round the various divisions of the Laboratory. He was also shown the display, relating to the progress of work at the Indian Institute of Petroleum, which had been arranged there.

NPL New Delhi—Dr S. Husain Zaheer, Director-General, CSIR, welcoming Mr Pompidou, French Prime Minister (fourth from left) at a reception held in his honour.

RESEARCH PROGRESS

CFRI, JEALGORA

Physical and Chemical Survey of the Upper Assam coals—Studies have revealed that the coals of this area are strongly caking even though of low rank and of high sulphur content. Apart from preliminary beneficiation of the coals, coking tests were carried out on binary and ternary blends of the washed Assam coals in admixture with low to medium volatile coking coals from Jharia coalfield and medium volatile medium coking coals from Raniganj coalfield.

Encouraging results were obtained and it was concluded that 20-30 per cent of Assam coal could be profitably used in blend with 50-55 per cent of washed low volatile coking coals of Jharia field and 25-30 per cent of medium volatile medium coking Raniganj coals. Moreover, upto 30 per cent of the Assam coals, when blended with Jharia coals from seams V and above, produced coke of metallurgical specifications. The sulphur content in the cokes produced from most of the blends was found to be 1 per cent or slightly higher.

Thus, the utilisation of strongly caking coals from Upper Assam coalfield for metallurgical purposes appear feasible provided that the coals are of acceptable quality in terms of ash and sulphur and are delivered at competitive cost at the metallurgical coke manufacturing centres in the eastern region.

CGCRI, CALCUTTA

Studies in Crystallisation of glasses—Differential Thermal Analysis, X-Ray diffractometry and electron microscopy techniques were used in studying the crystallisation of lithia-alumina-silica 975° eutectic glasses without any nucleating agent and with platinum as nucleating agent. In the glasses containing platinum, crystallisation preceded by phase

(*Contd on p. 4, col. 1*)

BRIEFS

SYMPOSIUM

A symposium on Microwave Devices and Systems will be held at the Central Electronics Engineering Research Institute, Pilani (Rajasthan), during March 20-22, 1965.

Sixth Technological Conference

The Sixth Technological, conference jointly sponsored by ATIRA, BTRA and SITRA, was held in Bombay during Jan. 18-20, 1965. Shri M. C. Chagla, Union Minister of Education and Vice-President, CSIR inaugurated the conference. The conference was very well attended by technicians and participants from Bombay as well as from other parts of the country.

Dr C. Nanjundayya, Director, BTRA in his welcome address stressed that such conferences would enable the mill managements and technicians to appreciate the advantages of a "scientific approach" to their daily problems.

Shri Chagla in his inaugural address said that the Textile Industry in India was one of the largest of our industries. India had a great tradition in textiles and our textiles used to go to all parts of the world. He said, "Research is the very basis of progress. No industry can progress without research". He also emphasised the need for improving the quality. He welcomed the setting-up of Industrial Psychology and Textile Engineering Research and Development Units at BTRA. Shri Chagla hoped that other industries would also take a lead in establishing such research institutes in their own field.

The conference was held in eight technical sessions and 31 papers on different aspects of textiles were presented.

Fifth Seminar on Electrochemistry

The Fifth Seminar on Electrochemistry organised by CECRI, Karaikudi was held at the Institute during Jan. 27-30, 1965. The seminar was inaugurated by Dr Yu. V. Pleskov of the Institute of Electrochemistry, Academy of Sciences USSR, Moscow. More than 110 papers (12 from abroad) were presented at the following seven technical sessions : (1) Aluminium session (16 papers); (2) Electrode-kinetics, electrochemical equilibria and electro-analysis (34 papers); (3) Corrosion (13 papers); (4) Electro-organic and inorganic products (13 papers); (5) Electrothermics and electrometallurgy (2 papers); (6) Electrodeposition and metal finishing (25 papers); and (7) Batteries (11 papers). The session on aluminium was a special one arranged to focus attention of all electrochemists and technologists on every aspect of aluminium production and its uses, as aluminium is the only non-ferrous metal which could be of extensive use and for which resources are considerable in India.

Besides Dr Pleskov, the other foreign scientists who attended the seminar were Dr V. E. Kazarinov of the Institute of Electrochemistry, Academy of Sciences, USSR; Dr O. Radovici, Academia R P.R., Central de Cercetari Chimice, Bucharest; Dr S. Sternberg, of the Institute of Physical Chemistry, of the Rumanian Academy, Bucharest; Prof. N. Watanabe of the Department of Industrial Chemistry, Kyoto University, Kyoto, Japan; and Messrs T. Ngamwongka, and D. Wonghong from Thailand. Over 50 delegates representing various industrial establishments, universities and Government departments from India also participated.

On the occasion, Dr P. P. Reddy, Joint Director of Industries and Commerce, Govt. of Madras declared open an exhibition on "Aluminium and processes ready for exploitation" by switching on a new type of cupric oxide cell developed at the Institute.

CMRS Dhanbad Annual Report

The Annual Report of the Central Mining Research Station, Dhanbad, for 1963-64 has been published. The Report (pp. 261) includes development of new instruments for measuring roof and floor movements in mines during mining operations, establishment of a ballistic mortar—a new testing facility for determining strength of explosives, the details of investigation on roof bolting with a view to improving the stability of underground roof, a pilot study on the incidence of pneumoconiosis among coal miners, lead dust problem in a lead smelting factory including the incidence of lead poisoning due to inhalation of lead dust, ventilation survey of mines, and progress of testing facilities of the CMRS which have contributed to the growth of mining equipment

NPL, New Delhi—Mr Pompidou, French Prime Minister being shown round the museum by Dr. Joglekar, Scientist-incharge.

industry in India. The appendices include among others, the list of publications, membership of the research personnel in technical committees, and technical enquiries attended to.

RRL Hyderabad Annual Report

The Annual Report of the Regional Research Laboratory, Hyderabad. for the year 1963-64 has been published. The report (pp. 123) in its fifteen chapters reviews the work done by the laboratory during the year. It includes research progress in the fields of oils and fats ; surface coatings, essential oils and aromatic chemicals, biochemistry, coal etc., and other activities such as operational research, technical information & liaison, pilot plant studies, publications issued, patents, colloquia, visitors, and general administration.

NML Jamshedpur

Shri M.C. Chagla, Union Minister of Education and Vice-President CSIR, opened the side and central wings of the NML main building and Prof. Humayun Kabir, Union Minister for Petroleum & Chemicals inaugurated the experimental light naphtha injection system at the low-shaft pilot plant, of the laboratory on Feb. 6, 1965.

Mr L. I. Terentiev

Mr L.I. Terentiev of the All-Union Research Electro-mechanical Institute, Moscow, U S.S.R., joined the National Aeronautical Laboratory, Bangalore, on Jan. 29, 1965 as a visiting expert on "Utilisation of Wind Power" for a period of one year under the U.N. Special Fund Aid Programme.

Mr Terentiev (*b.* 1933) obtained the Diploma of Power Technician from the Moscow Polytechnical School, Moscow. in 1953 and the Diploma of an Engineer from the Moscow Engineering Building Institute, Moscow in 1955. He joined the All-Union Research Electromechanical Institute, Moscow in 1956 and has been working on design of wind electric generators, wind water-lifting devices, special power system for carrying out aerodynamic investigations, wind tunnel instrumentation and automatic control systems.

Mr Terentiev will assist the Wind Power Division of the Laboratory in planning and design of wind electric generators, windmills, etc.

Visitors

Mr F. A. Docherty, Asian Field Officer of International Labour Organisation stationed at Colombo, Ceylon and Mr John Lareau of International Labour Organisation, Geneva, visited the Central Mining Research Station, on Feb. 11 & 12, 1965 with a view to get themselves acquainted with the activities of the station and its impact on the economic development of the country. They discussed with Dr K. N. Sinha, Director of the Station various aspects of the assistance rendered by the Station to the mining industry in India.

Prof. Dr Toshire Isobe, Research Mining Engineer ,Faculty of Technology of Hokkaido University, Japan, visited CMRS, Dhanbad on Feb. 9, 1965. Dr Sinha, Director apprised him with the work being carried out and the programme of further work, and the trend of the mining industry in India.

Dr C. J. Stubblefield, F.R.S., Director, H. M. Geological Survey, UK, visited the CGCRI, Calcutta on Jan. 2, 1965.

Dr. Tin Aye, Deputy Director-General of Geological Survey of Burma and Head of the Mineral and Geological Studies of the Petroleum & Mineral Development Corporation of the Government of Burma, visited the CGCRI, Calcutta, on Jan. 4, 1965.

Dr K. L. Rao, Union Minister for Irrigation & Power, visited CPHERI, Nagpur on Jan. 19, 1965.

STAFF NEWS

Appointment

Shri S. J. A. Tirmizi, Scientist, CDRI, Lucknow (Feb. 8, 1965).

Resignations

Shri R C. Verma, Scientist, NML Jamshedpur (Feb. 1, 1965).

Shri Y.A Joglekar, Scientist, NML Jamshedpur (Feb. 8, 1965).

Nominations ISI

Dr Asghar Husain & Shri K. Seshacharvulu, Scientists, RRL, Hyderabad—principal and alternate members, (i) Chemical Engineering Sectional Committee, (ii) Process Vessels Sub-Committee, and (iii) Size separation and Filtration sub-Committee.

Dr E R. Saxena & Shri K. Seshacharyulu, Scientists, RRL, Hyderabad—principal and alternate members Adsorbents and Desiccants Sub-Committee,

(*Contd on p, 4 col. 2*)

NML, Jamshedpur—Shri M.C. Chagla, Union Education Minister & Vice-President CSIR declares open the side and central wings of NML, main building.

NOTIFICATION

It is proposed to appoint a Director for the Central Indian Medicinal Plants Organisation, of the Council of Scientific and Industrial Research. He is expected to guide and supervise the activities of the organisation, whose functions are :—

(i) to evolve and lay down the standards for the plant drugs;
(ii) to develop intensive cultivation of medicinal plants, indigenous as well as exotic under different regional conditions;
(iii) to serve as a plant introducing centre for such medicinal plants as are of great economic importance; and
(iv) to carry out a survey of the medicinal plant resources of the country.

There is no standard form of application. Those who wish to be considered are invited to send a statement to the Director-General, Scientific and Industrial Research. Others who may wish to send nomination for the post may kindly forward their proposals to the Director-General.

All communications will be treated confidential. Statements and proposals should be received by the Director-General on or before the 31st of March, 1965 at the office of the Council of Scientific and Industrial Research, Rafi Marg, New Delhi-1.

RESEARCH PROGRESS

(*Contd from p. 1, col. 3*)

separation was observed. Phase separation and crystallisation occurred throughout the mass of the glass. In the glasses containing no platinum, crystallisation started always from the surface inward and phase separation was evidenced only in the interface between the crystalline part and the glass.

NML, JAMSHEDPUR

Pilot Plant Beneficiation and Sintering Studies of Iron Ore—Systematic pilot plant studies on beneficiation and sintering of 100 tons of iron ore from Bailadila iron ore mines was conducted on behalf of the National Mineral Development Corpn. The sample was subjected to wet screening and jigging. The results obtained had indicated that, besides solving the problem of ore handling, wet screening had resulted in yielding sized lumpy ore free from adherent fines for direct charging into the iron blast furnace or for export. By employing jigging of the ore fines, the silica and alumina contents could be appreciably lowered, yielding an upgraded product suitable for 'sinter' production. Comprehensive studies undertaken on sintering characteristics of the –3/8″ (–9.5 mm) upgraded fines, indicated that good metallurgical grade sinters including self-fluxing sinters could be successfully produced. The addition of 2-3 per cent of freshly prepared burnt lime to the sinter mix along with limestone and dolomite resulted in higher rate of sintering without affecting the sinter quality to any appreciable extent. Employing mixed firing technique for sintering, upto40 per cent of the solid fuel could be replaced by gaseous fuel to yield sinters of good quality possessing high degree of oxidation.

CSMCRI, BHAVNAGAR

Reflectometer—A reflectometer has been designed for comparison of whiteness of powders in white light. It consists of a photocell on which reflected light from the specimen falls. Voltage generated is fed to a galvanometer, with three sensitivity scales which can be adjusted to the required range. The deflection of the spot on the scale is proportional to the reflectivity of the sample.

For the measurement of whiteness the scale used is 0 to 100, a perfectly black surface (lamp black) being taken as zero and a standard white magnesium carbonate block being taken as 100. On this scale all reasonably white powders or surfaces fall in the range 90 to 100. Below 90 the material looks dull. The method gives the relative whiteness of the powder compared to the standard white.

STAFF NEWS

(*Contd from p. 3, col. 3*)

Shri M.S. Kothari, Scientist, CDE, Unit, CSIR, New Delhi—Member, Process Vessels Sub-Committee.

Dr Y. Venkatesham, Scientist, CDE Unit, CSIR New Delhi—Member, Size separation and Filtration Sub-Committee.

Deputations

Dr S. Mukherjee, Scientist, IIBEM, Calcutta participated in the Cholera Research Symposium held at the University of Hawaii, Honolulu, from Jan. 24-29, 1965.

Shri S.D. Khanduja, Scientist, NBG Lucknow, resumed duties on Jan. 18, 1965 after three-year stay at the Odessa Agricultural Institute, Odessa, USSR, under a Government of USSR Scholarship. He carried out 'Studies on the Fruitfulness of Grape-vine Buds' at the Institute and was awarded a Doctorate degree.

Dr S. Venkat Rao, Scientist, CFTRI, Mysore left for Canada on Jan. 17, 1965, for advanced research work in nutrition on a UNICEF fellowship. He will work with Dr Morrison in the Division of Nutrition, Food and Drug Laboratories, Department of National Health and Welfare, Ottawa, Canada.

Shri B. Satyanarayana, Scientist, NAL, Bangalore, after completing his assignment with the Canadian Vickers, Montreal, Canada in connection with the 4-ft Wind Tunnel Project, proceeded to U.K. on Feb. 1, 1965 for training at the Royal Aircraft Establishment, Bedford, under Colombo Plan.

Honours & Awards

Prof. K.S.G. Doss, Director, CECRI, Karaikudi, has been elected Vice-President of the Institution of Chemists (India) for 1965.

Dr T.H. Sharma Rau, Scientist, VITM, Bangalore, has been elected member of Museums Association, London.

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CSIR NEWS

VOL. 15 MARCH 15, 1965 : PHALGUN 24, 1886 NO. 5

25-3-65

MEETINGS

The Executive Council of the NAL, Bangalore will meet at the Wind Tunnel Centre, NAL, Belur, Bangalore on March 19, 1965 at 9.30 a.m. under the Chairmanship of Shri J.R.D. Tata.

A meeting of the Executive Council of CDRI, Lucknow, will be held on March 31, 1965, at 11.00 a.m. in the Conference Room, CSIR Sectt Building, Rafi Marg, New Delhi, under the Chairmanship of Dr Jal R. Patel.

SYMPOSIUM

The Central Building Research Institute, Roorkee will be holding a Symposium on "Changing Concepts of Human Habitation" at the Institute sometime in December, 1965, with a view to reviewing the trends in architectural concepts for the progressive execution of building programmes.

The symposium will explore the contribution of various factors in the moulding of human habitation in view of social, scientific and technical advancements in the field of architecture. Discussions will be carried out in four technical sessions devoted to the following themes : (1) Human and social needs, (2) Planning concepts and bye-laws, (3) Architectural concepts and values, and (4) Building Materials and Techniques.

The symposium is open to various disciplines associated with architecture in promoting the changing concepts of human habitations and it will afford an opportunity of exchanging useful and latest information based on research and practical experience. It is also planned to invite eminent architects and other experts from abroad to present papers at the symposium.

Summary of papers for presentation may be sent to Shri P. L. De, General Secretary of the Symposium Organising Committee, CBRI, Roorkee, before April 30, 1965. Further details may be had from him.

SUMMER SCHOOL

A Summer School in Advanced Chemical Engineering will be held at the Regional Research Laboratory, Hyderabad during June 14-26, 1965 under the auspices of the Council of Scientific and Industrial Research. Invitations have been extended to various Institutes and Industries in India, interested in the field of chemical engineering to nominate members from their organisations for undergoing training at the Summer School. Advanced Lectures covering various aspects of chemical engineering will be delivered by experts from all over India. Practical demonstrations (mostly on pilot plant scale) in specialised topics are also included in the course for the benefit of the trainees.

Refresher Courses

The CECRI, Karaikudi, will be conducting the following Refresher Courses ranging from a period of 7-11 weeks during the months of June-November, 1965 : (1) Storage Battery Technology, (2) Corrosion and its Prevention, (3) Electroplating. The minimum qualification for admission to the courses is a Bachelor's degree in chemistry, physics, metallurgy or engineering. The fee for each course per candidate is Rs 100. Preference will be given to candidates sponsored by their employers. Prospectus and application form may be had from the Director, CECRI, Karakudi-3, on remittance of Re. 1 by M.O.

RESEARCH PROGRESS

NML, JAMSHEDPUR

Pilot Plant Studies on Beneficiation of Limestone—Investigations on beneficiation of 100 tons each of the four Limestone samples, viz., (i) run of mine, (ii) 1 in. (25.4 mm.) fines from the old dumps, (iii) currently produced fines, and (iv) open hearth flux grade, received from Nandini Mines of Bhilai Steel Plant, were conducted. Scrubbing followed by wet screening of the three samples could eliminate most of the clay present in the form of slime. The results indicated that the +1/2 in. (+12.7 mm.) washed lump fractions from the three samples, were of improved quality, low in insoluble contents. The coarse fractions were also free from ferruginous murrum balls.

The −1/2 in. fractions were of poorer grades due to the presence of murrum balls, which get concentrated in this fraction and being hard, could not be eliminated by scrubbing and wet screening. However, it was found that most of the murrum balls could be eliminated by jigging.

CGCRI, CALCUTTA

Indian Magnesites as Refractory Materials—The average and low grade magnesites from Agar-Girechchina sector of Almora deposits containing variable amounts of CaO and SiO_2 were effectively sintered at 1550° by crushing the material to sufficient fineness (about 40 mesh) to bring about homogeneity. Small addition of boric acid restricted the inversion of the unstable phases obtained on sintering. Magnesite refractories made from the samples had satisfactory properties. The low grade magnesites containing about 20 per cent of CaO were made into di- and tri-calcium bonded refractories having high load bearing capacity and high cold crushing strength.

(Contd on p. 4, col. 1)

BRIEFS

Indo-UAR Joint Scientific Board

The first meeting of the Indo-UAR Joint Scientific Board was held in Cairo, during Jan. 19-21, 1965.

The Indian delegation consisting of Dr S. Husain Zaheer, Dr K. Venkataraman, Dr S. Dhawan, Shri G. K. Chandiramani, Prof. B. R. Seshachar and Shri A. Rahman, member-secretary, was led by Shri M. C. Chagla, Union Education Minister & Vice-President, CSIR.

The following points were discussed : (1) Exchange of research personnel; (2) Collaboration and joint research programmes; (3) Exchange of research programmes and industrial information; (4) Working out areas for techno-industrial collaboration; (5) Planning and organization of research; (6) Joint project on history of science; (7) Holding of exhibition of scientific instruments; (8) Participation in scientific meetings; (9) Extension of the agreement to cover medical and agricultural fields.

The following decisions were arrived at in respect of the above items.

1 A. From UAR : (i) Research workers in physics, glass technology, leather tanning, oils and fats, textile chemistry, synthetic dyes, synthetic organic chemistry, metallurgy, biochemistry and microbiology, food technology, will be invited to work in various laboratories and universities in India, for a period ranging from 2 months to 2 years; (ii) five technical assistants will be trained at the Central Scientific Instruments Organisation-Chandigarh, for a period of three years; (iii) two or three post-graduates with physics, chemistry and mathematics will be admitted at the Indian Institute of Science, Bangalore, for preparing them for post-graduate degree in chemical, mechanical and aeronautical engineering; (iv) five or six engineering graduates will be admitted at the Institutes of Technology in India with a view to prepare them for post-graduate degree in mechanical and chemical engineering; (v) a scientist in documentation will be trained in India.

1 B. From India : Indian experts will visit UAR in respect of the following projects, (a) medical research (one expert) and agricultural research, (one expert) for 6 months; (b) preparation of a report for the Joint Board for collaboration in Oceanographic and Marine Fisheries (one scientist), (c) organization of a Space Research Unit, at the National Research Centre (one scientist); (d) problems connected with the removal of salinity from soil, hydraulic research, and road and building construction (for three weeks or longer).

2. Joint research projects in the following areas would be worked out by scientists nominated by the two countries: silting, hydrology, removal of salinity from soil, marine biology, oceanography, reproductive biology, medicinal plants, utilization of the cotton plant, protein nutrition, structural engineering, control of water hydacinth, leucoderma.

3. It was decided that the National Documentation Centres of the two countries would collect the information in data cards proforma of which has been finalized.

4. Pending a detailed note on areas of collaboration, a complete list of instruments manufactured in India would be sent to UAR and vice-versa as a first step.

5. A person from UAR will be deputed to India to work for a short time.

6. It was agreed that work in this direction should be taken up in the two countries.

7. An exhibition of Scientific books and journals published in India and instruments manufactured in India, would be organized during 1965.

8. A list of meetings would be finalized and communicated to the respective countries so that they may depute their representatives to attend them.

9. Indian side would also explore the possibilities of extending the agreement to cover medical and agricultural fields.

It was also agreed that five or six leading UAR scientists would be invited to India to visit educational and research institutions with a view to acquaint themselves with the scientific tradition in the country for help in projecting co-operation.

The next meeting of the Board was decided to be held in New Delhi in the second half of January 1966.

Seminar on Fatty Acids

A three-day seminar on fatty acids was held at the Regional Research Laboratory, Hyderabad during Feb. 10-12, 1965. The seminar was broadly divided into industrial and academic sessions, and was attended by nearly 100 participants representing industry (producers and consumers) and educational and research institutions from all over India.

Under the industrial section, discussions took place in two sessions : 'Production and Consumption' and 'Research and Equipment' presided over by Shri M. G. Kotibhaskar (Navsari Oil Products Pvt., Ltd) and Prof. J.G. Kane (Bombay University) respectively. The information collected (by circulation of questionaire) on the position of fatty acid industry in India, from various sources—industry and institutions—formed the basis of discussions. The need to find cheaper and substitute raw materials for the growth of the fatty acid industry, was emphasized.

The academic aspects were discussed under four sessions : (i) 'Industrial Products'—Chairman : Dr S. Varadarajan ; (ii) 'Properties and derivatives'—Chairman : Dr M. M. Chakrabarthy : (iii) 'Occurrence, synthesis and separation'—Chairman : Prof. B.D. Tilak and (iv) 'Biological aspects'—Chairman : Dr J. Ganguly. In all 42 papers were presented at the academic sessions. The different methods of splitting of fats and hydrogenation of fatty acids, direct production of wax esters from fatty acids, the preparation and properties of hydroxy and epoxy derivatives, analytical techniques (in particular chromatography) and certain unusual fats and fatty acids were some of the topics which received special consideration during the discussions. Three special lectures were delivered on various facets of the chemistry, technology and biochemistry of fatty acids by Dr B.C. Subba Rao (Hico Products Pvt. Ltd., Bombay), Dr B.P. Godrej (Godrej Soaps Pvt. Ltd, Bombay) and Dr J. Ganguly (Indian Institute of Science, Bangalore).

Arab League Secretary-General Visits NPL

Mr Abdel Khalke Hassouna, Secretary-General of the League of Arab States visited NPL, New Delhi on Feb. 26, 1965. At a reception held in his honour and attended by a large gathering, Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research referred to the scientific and cultural bonds between India and Arab countries from time immemorial. In this context Dr Zaheer also referred to the creation of a Joint Indo-UAR Scientific Board under a recent agreement. He further added that the Indian scientists would be too happy to enter into similar agreements with other Arab countries.

Mr Hassouna, addressing the gathering of scientists, said that the importance of science was unfortunately not realised till recently in the Arab countries. The situation had changed now and scientists are taking their due place in the destiny of mankind. Recently it was decided to create an Arab Scientific Board of Research and it is on the verge of becoming a reality. The Arab League will have something to say about scientific collaboration after the Scientific Board came into being. Mr Hassouna hoped that the Arab Scientific Board of Research would be able to play its part and would fill the gap that is felt now in the Arab States.

Dr Clovis Maksoud, the Arab League Representative in India, also spoke on the occasion.

Mr Hassouna was later taken round the various divisions of the Laboratory.

NPL, New Delhi – Dr S. Husain Zaheer welcoming Mr. Hassouna (Second from left), Secretary-General of the League of Arab States

Visitors

Dr Charles A. Egger, Resident Director, UNICEF, New Delhi visited CFTRI, Mysore, on Jan. 24, 1965.

Dr Tesho A. Tashev, Corresponding Member of the Bulgarian Academy of Science and Director of Nutrition Research Institute, Sofia, visited CFTRI, Mysore, on Feb. 10, 1965 under the Cultural Exchange Programme between India and Bulgaria.

Mr R. KeithPorter, President, Thomas J. Lipton Limited (Canada) and his wife visited the FAO International Food Technology Training Centre and the CFTRI, Mysore, on Feb. 17, 1965, accompanied by Mr R.W. Stoker, Factory Manager, Lipton India Limited, Coonoor.

Mr R. Ernest Leffel, an Associate of the Camp, Dresser & McKee, a Consulting Engineer's Firm of Boston, USA, visited the CPHERI, Nagpur on Feb. 10, 1965 and delivered a lecture on 'Design Criteria Development for Bogota, Colombia'.

Mr R. Pavanello, Chief, Environmental Pollution, WHO, Geneva, visited the CPHERI, Nagpur, during Feb. 10-13, 1965 and gave a talk on 'Role of WHO in the control of environmental pollution.'

Prof. R.D. Singer, Assistant Professor of Environmental Health, University of Minnesota, and Mr R.R. Harris, Chief Public Health Engineer, Health Division of USAID visited the CPHERI, Nagpur during Feb. 12-13, 1965. He delivered a lecture on 'Ground water development course.'

Dr J. Koryta of the Polarography Institute, Czechoslovakia Academy of Sciences, Prague visited the CECRI, Karaikudi during Feb. 13-16, 1965. He delivered a series of four lectures on the following subjects : (i) Influence of the structure of electrical double layer on electrode reactions, and (ii) Electrode processes controlled by chemical reactions.

CSIR Gift to Lagos University

Indian scientific instruments worth sixty-five thousand rupees were presented recently to the University of Lagos, by the CSIR. The presentation was made at a special ceremony by the Indian High Commissioner in Nigeria. The Vice-Chancellor of the University of Lagos, Prof. Eni Njoku received the instruments on behalf of the university.

Shri A. Rahman

Shri A. Rahman, Scientist-in-charge, Survey & Planning of Scientific Research Unit, CSIR, has proceeded to Iraq on Feb. 26, 1965 to take up his assignment as UNESCO consultant on a nine to thirteen week science planning mission.

STAFF NEWS

Appointments

Shri N. Kumar, Scientist, NCL, Poona (Jan. 21 1965).

Shri D. Bhushan, Scientist, IL&E Unit, CSIR, New Delhi (Feb. 15, 1965).

Nominations

Dr A.B. Kar, Scientist, CDRI, Lucknow—Member of the Executive

(*Contd on p. 4, col. 1*)

RESEARCH PROGRESS

(*Contd from p. 1, col. 3*)

CSMCRI, BHAVNAGAR

Water Evaporation Control—Field experiments on water evaporation control using cetyl-stearyl alcohol in the form of aqueous emulsion and powder were carried out on a reservoir with a water spread of 200 acres, near Bhavnagar. In the emulsion technique about 35 million gallons of water were saved, and the chemical consumption was 750 kg. while in the powder technique a saving of 50 million gallons of water was obtained with 1400 kg. of alcohol consumption. The cost of alcohol consumed in the emulsion technique was Rs 3,000 and in the powder technique it is Rs 5,600. This increase in the cost of chemical in the powder technique is not significant enough when compared to the increased saving of 15 million gallons of water worth Rs 7,500 even when the cost of water is taken at 50 paise per 1000 gallons.

STAFF NEWS

(*Contd from p. 3, col. 3*)

Council of the Family Planning Institute, New Delhi.

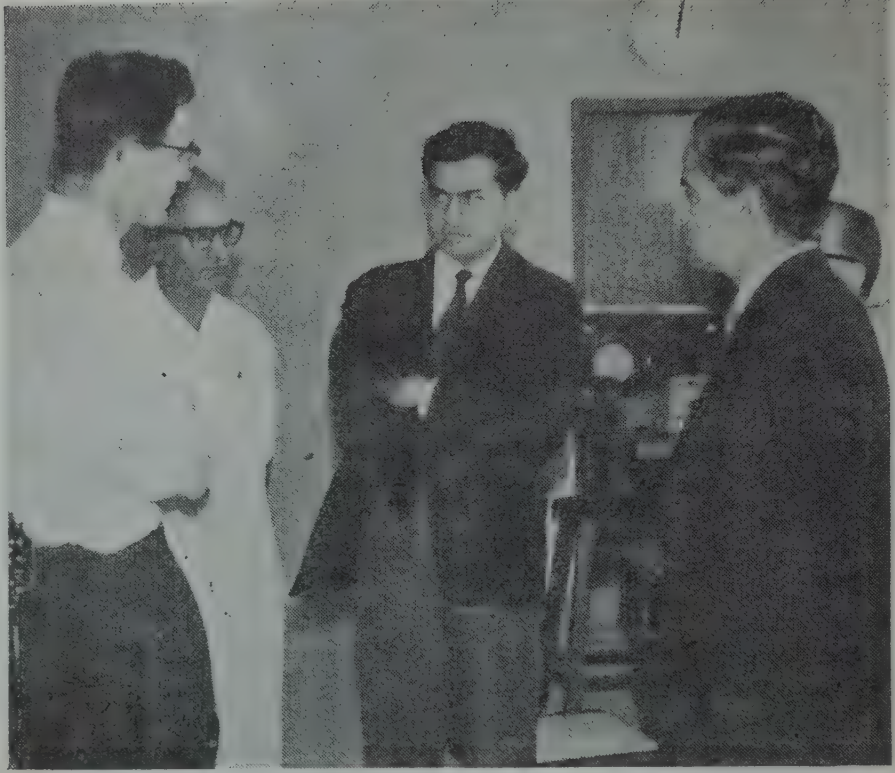
Dr A.N. Roy, Scientist, IIBEM, Calcutta—Member of the Medical Council of India.

Dr H.A.B. Parpia, Director, CFTRI, Mysore—Member, (i) Mysore State Board of Medical Research, (ii) National Freedom From Hunger Campaign Committee and the Governing Board, and (iii) National FAO Liaison Committee, (iv) Development Council of Food Processing Industries, Ministry of Industry and Supply.

Deputations

Sarvashri S.N. Naik, M. Surendraiah and S. Nagabhushana, Scientists, NAL, Bangalore returned to India on Feb. 20, 1965 after completion of nine month's training at the National Aeronautical Establishment, Ottawa, Canada, under Colombo Plan.

Shri Srinathkumar, Scientist, NAL, Bangalore, returned to India on Feb. 20, 1965 after completion of an assignment with Canadian Vickers Ltd., Montreal, Canada, in connection with the 4ft x 4ft Wind Tunnel Project.



NAL Bangalore—Dr J.V. Narlikar (Centre) with the Scientists of the Laboratory, during his visit on Feb. 22, 1965

Dr Jayant Vishnu Narlikar, the 26-year old young Indian Scientist who has distinguished himself by propounding *a new theory of gravitation* in collaboration with the famous British Scientist, Prof. Hoyle visited the Council of Scientific & Industrial Research New Delhi on Feb. 8, 1965 and delivered a lecture on Radio Galaxies, before a gathering of scientists at the NPL, New Delhi on Feb. 9, 1965.

After obtaining his B.Sc. degree in mathematics, physics and Statistics, from the Banaras Hindu University, he joined Kings College, Cambridge on a Tata Endowment Scholarship. Since 1957, he has been doing research in collaboration with Prof Hoyle, and obtained his doctorate. He is now a Research Fellow there attached to the Department of Applied Mathematics.

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I, S.A. Chari, hereby declare that the particulars given above are true to the best of my knowledge and belief.

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CSIR NEWS

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SEMINAR

The Indian National Scientific Documentation Centre (Insdoc), New Delhi is organising a three-day seminar on Scientific and Technical Translation at New Delhi during April 15-17, 1965. Organisation of technical translation activities in foreign countries, review of translation facilities in India and scope for further development, human and mechanical aspects of translation, and problems of technical translations in different scientific disciplines are some of the important topics to be discussed at the seminar. The seminar will be inaugurated by Dr Nihar Ranjan Ray, M.P., Chairman, Executive Council, Insdoc, at the National Physical Laboratory Auditorium on April 15, 1965 at 10.30 a.m.

Prof. P. Maheshwari, FRS

Prof. Panchanan Maheshwari, Professor and Head of the Department of Botany, University of Delhi, has been elected *Fellow of the Royal Society*, London (FRS) for his contributions in Morphology and Embryology of Seed Plants. He has been associated with the CSIR as a member of its Governing Body, Chairman, Biological Research Committee, member of the Executive Councils of RRL, Jammu, and Insdoc, New Delhi and member, CSIR working Group of the Fourth Five Year Plan, and Editorial Boards of the Journal of Scientific and Industrial Research and Indian Journal of Experimental Biology.

Prof. Maheshwari (*b.* Nov. 9, 1904) took his B.Sc. & M.Sc. degrees from the Allahabad University and later worked as a research scholar for three years at the same

(*Contd on p. 4, col. 2*)

RESEARCH PROGRESS

National Laboratories

NPL, NEW DELHI

Wave Guide Components—Techniques have been developed for making wave guide components by electroforming. Straight pieces of waveguides, E and H plane tee junctions, hybrid tees, bends, etc. have been successfully electroformed for the X-band. The dimensions and surface finish of these components are within the specified tolerances, and the electrical performance (residual standing waves ratio) is of the same order as of any of the imported items.

CGCRI, CALCUTTA

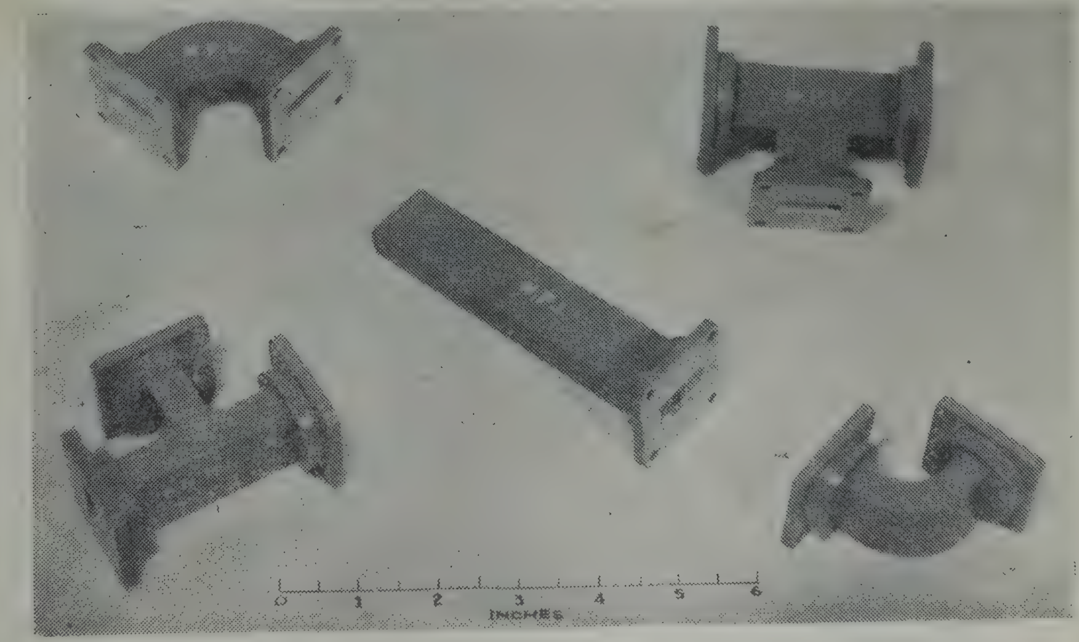
Quality Kaolin Clays—Products, having G.E brightness as high as 95 per cent as against 74-82 per cent for soft clays and covering power of over 13 sq. m/kg. of dry powder, have been developed by controlled calcination of suitable kaolin clays. These are likely to find commercial applications in industries like paints, paper, where brightness and covering power are of utmost importance. These may also partly replace pigments like titanium dioxide, zinc oxide which are comparatively costly materials.

Sponsored Research

Structure and Genesis of Singhbhum Granite—This project was taken up with the following objectives : (i) Study of the genesis and history of emplacement of the composite body of Singhbhum Granite, based on a study of about 900 square miles in the northern part of the body ; and development of new principles and criteria applicable to the study of the genesis of other granitic bodies ; (ii) tracing the possible genetic connection of the granite to the associated mineral deposits ; and (iii) finding clues to the location of new mineral deposits in the region. Intensive investigations carried out for more than 3 years produced the following results :

A detailed history of the emplacement of the northern part of of Singhbhum Granite has been worked out. This part has been found to be a composite, late-tectonic, upper mesozonal batholith consisting of ten separate, forcefully

(*Contd on p. 4, col. 1*)



NPL, New Delhi—Some of the wave guide components made at the Laboratory

BRIEFS

Insdoc Executive Council

Dr Nihar Ranjan Ray, Member, Parliament has been nominated chairman of the Executive Council of Insdoc, New Delhi consequent on Dr C.D. Deshmukh, Vice-Chancellor, Delhi University regretting his inability to accept the chairmanship on grounds of health.

IIP, Dehra Dun

A crank case lubricating oil rating engine has been recently acquired for evaluating the characteristics of crank case lubricating oil under high temperature operating conditions, e.g., oxidation stability, corrosive tendency and sludge and varnish producing tendencies. This engine is equipped at present to perform the CRC-L-38 Test, which is one of the tests under Mil-L-2104-B Test specifications adopted by the U.S. Army for lubricating oils which is also the accepted test in India.

A cold chamber in which temperature up to —40°C. can be reached has also been installed for studying the problems faced in operating automotive engines in extremely cold climates. A jeep engine has been installed in the cold chamber and arrangements have also been made to simulate conditions present at high altitudes.

NAL, Bangalore

The Vikram University, Ujjain has recognised the Laboratory as centre of research in the fields of Physics, Mathematics, Aeronautical Engineering and Electrical Communication Engineering.

Survey & Planning of Scientific Research Unit, New Delhi

A Study of Expenditure in National Laboratories—This is a survey report, second in the series, recently brought out by the Unit (Authors : A. Rahman, A. Ghoshal, N. Sen, N.R. Rajagopal, Mrs S. Das Gupta, S.H.M. Husaini & A.K. Roy). The report is divided into five broad heads, : Research Expenditure, Scientific Personnel, Membership of Scientific and Industrial Committees; Research Output ; and Discussions. The statistical tables are presented in Appendix 1 included at the end.

The purpose of this survey is to evaluate relative research expenditure on items such as chemicals, equipment, pilot plant, salary of officers, etc. The survey, in addition, includes the output of the laboratories in terms of research papers, patents, technical reports, etc.

Some Vegetable Tanning Materials of Assam

The Regional Research Laboratory, Jorhat, Assam has brought out a 31-page bulletin entitled—Some Vegetable Tanning Materials of Assam (authors : J.N Baruah, P.R. Rao & E.K. Janaki Ammal). This bulletin gives an account of the more important tannin yielding species of Assam with regard to their availability in commercial quantities and industrial exploitations. The local names of the species, wherever known are indicated, and under each species a short botanical description, its distribution, tannin analysis and other information of interest have been added. A list of other tannin yielding plants of minor economic importance to Assam is given in the appendix at the end.

Visitors

Dr S.G. Smirov, Friendship University, USSR visited NCL, Poona on Feb. 26, 1965 as a guest scientist.

Dr F. Hawking of the Medical Research Council, National Institute for Medical Research, London visited CDRI, Lucknow during March 10-13, 1965 and delivered a lecture on 'Micro-filarial periodicity' on March 10, 1965.

Lectures at NCL Seminars

Dr R.G.R. Bacon, Chemistry Department, Queen's University, N. Ireland, U.K. delivered lectures on 'Organic oxidation and reduction process' and 'Copper promoted organic reaction' on Feb. 8 and 9, 1965 respectively.

Dr A.D. Karve, Head of the Botany Department, Shivaji University, Kolhapur delivered a lecture on 'Some physical and biological models for circadian system' on Feb. 6, 1965.

Dr M.G. Macfarlane, Lister Institute, U.K. delivered a lecture on 'Recent work of mammalian and bacterial phospholipids' on Feb. 15, 1965.

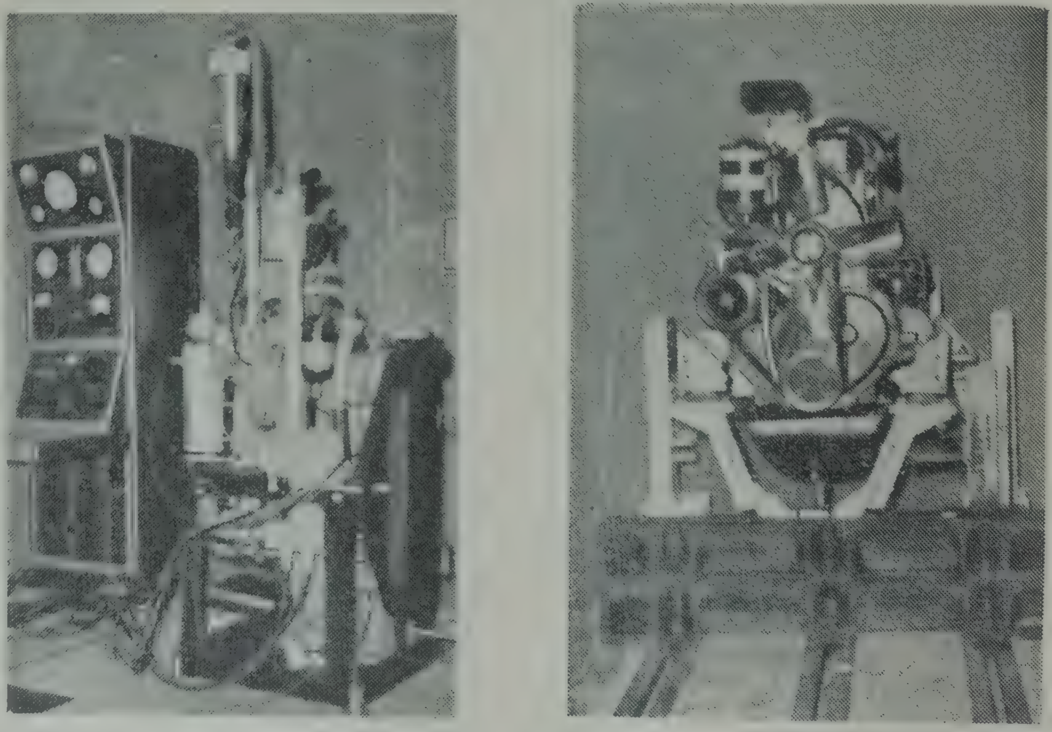
Dr I.C.M. Campbell, University of Southampton, U.K. delivered a lecture on 'Phosphoranes in organic synthesis' on Feb. 15, 1965.

Special Publications

IQSY News Letters, No. 15 & 16; dated Oct. 9, 1964—Indian National Committee for IQSY, New Delhi.

High strength deformed bars—Building Digest No. 31, CBRI, Roorkee, pp. 4.

Pavate, K.D., Prabhu, U.P. Tyagi, M.S. & Subrahmanyam, D.L. CEERI, Pilani—Acoustical



IIP, Dehra Dun—Crank case lubricating oil rating engine (left) and Jeep engine in cold chamber (right) treatment of the Birla Public School Auditorium : Technical Report No. AA-1 (August 1964).

Pavate, K.D., Prabhu, U.P., Tyagi, M.S. & Subrahmanyam, D.L. (CEERI, Pilani)—Acoustical treatment of the Birla Central Auditorium : Technical Report No. AA-2 (August 1964).

Pavate, K.D., Ramakrishnan, K.V. & Subrahmanyam, D.L. (CEERI, Pilani)—Acoustical Design of the Karnatak Medical College Auditorium : Technical Report No. AA-3 (September 1964).

Venkiteshwaran, S.P. & Sivaraman, K.R. (NAL, Bangalore)—Utilisation of wind power in arid and semi-arid areas in India. *Tech. Note No.* TN-WP-35-64.

Rao, D.M. & Raju, K.N. (NAL, Bangalore)—The use of splitters for flow control in wide angle conical diffuser. *Tech. Note No.* TN-AE-26-64.

Basava Raju, B. (NAL, Bangalore)—A study of simply supported square plates with cutouts by the Moire method and by finite difference. *Tech. Note No.* TN-SA-5-64.

Stearman, G.H. (NAL, Bangalore)—A digital computer design study for a transistor switching circuit. *Tech. Note No.* TN-SE-7-64.

STAFF NEWS

Appointments

Shri V.S. Bains, Scientist, CSIO, Chandigarh (Dec. 1, 1964).

Shri L.H. Mirchandani, Pool Officer, NPL, New Delhi (Jan. 11, 1965).

Shri B L. Sharma, Pool Officer, CSIO, Chandigarh (Jan. 19, 1965).

Dr S.B. Badachhape, Pool Officer, NCL, Poona (Jan. 20, 1965).

Dr R.N. Mathur, Scientist, CSIO, Chandigarh (Feb. 23, 1965).

Resignation

Dr B.D. Rawal, Scientist and Officer-in-charge of Poona Field Unit and Enteric Virus Research Laboratory of CPHERI at Poona (Jan. 8, 1965).

Transfer

Shri R.N. Bhargava, Scientist, CBRI, Roorkee—Survey & Planning of Scientific Research Unit, CSIR New Delhi (Feb. 8, 1965).

Nominations

Dr S. Husain Zaheer, Director-General, Scientific and Industrial Research, New Delhi—nominated on the Central Board of Railway Research, Ministry of Railways.

Others who have been nominated on the Central Board of Railway Research, Ministry of Railways are: Dr K. Venkataraman, Director, NCL, Poona, Dr A. Lahiri, Director, CFRI, Jealgora, Dr B.R. Nijhawan, Director, NML, Jamshedpur, Shri G.D. Joglekar, Scientist in charge, NPL, New Delhi & Shri Dinesh Mohan, Director, CBRI, Roorkee.

Dr K.N. Kaul, Director, NBG, Lucknow—Member, Landscaping of Roads Committee of the Indian Roads Congress.

Shri K.G. Krishnamurthi, Officer on Special Duty, NAL, Bangalore—Member, Standing Advisory Committee on Aeronautical Engineering Education.

Shri A.K. Bose, Defence Coordination Officer, CSIR, New Delhi—Member, Committee to work out a programme of participation by Scientists in Universities in International Conferences by the Universitv Grants Commission, New Delhi.

Dr H.A.B. Parpia, Director, CFTRI, Mysore—Member, Mysore State Board of Medical Research, Govt. of Mysore.

Dr B.M. Gupta, Scientist, CDRI, Lucknow—Member, Research Degree Committee in Veterinary Science (Bacteriology) of the Agra University, Agra.

ISI Nominations

Shri G.D. Joglekar, Scientist in charge, NPL, New Delhi—Member, General Council of Indian Standards Institution.

Dr M.G. Krishna, Director IIP, Dehra Dun—Member, Coal Tar, Products Sub-Committee.

Shri G.P. Mathur, Scientist, NML, Jamshedpur—Member, Sub-Committee on Sampling of Ores.

Deputations

Shri P.P. Bhatnagar, Scientist, NML, Jamshedpur has been deputed to Australia to attend the Eighth Commonwealth Mining and Metallurgical Congress being held during Feb. 26-April 4, 1965

Dr (Miss) S.B. Kulkarni, Scientist, NCL, Poona returned to Poona on Feb. 17, 1965 after completing her training at Imperial College of Science & Technology, U.K. under the Colombo Plan.

Mr Antic Bozidar joined NCL, Poona on Feb. 8, 1965 for work leading to Ph.D. degree under the Government of India Exchange Programme of scholars between India and Yugoslavia, 1964-65.

Honours and Awards

Dr N. K. Panikkar, Director, IOE, New Delhi has been elected Vice-President of the Indian Academy of Sciences.

Prof. G. S. Ramaswamy, Scientist, CBRI, Roorkee has been reelected Chairman, Structure Group I of the Institution of Engineers (India).

Shri G. L. Tandon, Scientist, CFTRI, Mysore, was awarded Shri Kashalkar Memorial Award of the All India Food Preservers' Association for the year 1964 for services and assistance rendered in the development of Fruit and Vegetable Preservation Industry in the country.

Prof. G. S. Ramaswamy & Shri M. G. Tamhankar, Scientists, CBRI, Roorkee, were awarded the John C. Gammon Prize for their paper 'Continuous Northlight Folded Plate Roof for the Indo-Swiss Training Centre for precision machines at Chandigarh'.

Sarvashri B. G. Rao & Amar Singh, Scientists, CBRI, Roorkee, have been awarded First Prize for their paper "Investigation on some aspects of load tests on sandy soils" presented at the students session of the 45th Annual Convention of the Institution of Engineers (India) held during Feb. 19-23, 1965.

Dr B.K. Nayar, Scientist, NBG, Lucknow has been appointed as a guide for Ph.D. degree of Agra University.

Dr D.S. Datar, Deputy Director-incharge, CSMCRI, Bhavnagar, has been elected member of the Faculty of Science of the Board of Studies in Chemistry and Pnysics of the Gujarat University, Ahmedabad.

Dr R.C. Mitra, Scientist, NBG, Lucknow, has been appointed a guide for Ph. D. of the Universities of Lucknow and Rajasthan.

Shri Ramchandra Pandey, NCL, Poona—Ph.D. (Poona Univ.); thesis: *Studies in terpenoids* (Guide : Dr Sukh Dev).

Shri K. R. Varma, NCL, Poona—Ph.D. (Poona Univ.); thesis: *Terpenoids* (Guide : Dr S. C. Bhattacharyya).

NOTIFICATION

It is proposed to appoint a Chief Editor for the Publications and Information Directorate of the CSIR. The Directorate is engaged in the dissemination of scientific and technical information through the publication of :

- i) scientific and technical journals;
- ii) proceedings of symposia;
- iii) monographs on special topics;
- iv) literature for popularisation of science; and
- v) other material of scientific and technological interest.

The Chief Editor will be responsible for the editing and production of the above literature and would be expected to set and achieve a high standard of scientific and technical excellence in these publications.

There is no standard form of application Those who wish to be considered are invited to send a statement of their curriculum vitae by name to the Director-General, Scientific and Industrial Research. Others who may wish to send a nomination for the above post may also kindly forward their proposals to the Director-General.

All communications will be treated as *Confidential*. Statements and proposals should be received by the Director-General on or before the 30th April, 1965 at the office of the Council of Scientific & Industrial Research, Rafi Marg, New Delhi-1.

RESEARCH PROGRESS

(*Contd from p. 1, col. 3*)

intruded magmatic bodies (mainly biotite granodiorite-adamellite together with muscovite-biotite adamellite, biotite trandhjemite and leucogranite) and numerous patches of granitised basic metamorphic rocks (hornblende granodiorite epidote granodiorite, hornblende diorite, pyroxene diorite). Each intrusive body has a distinctive pattern of primary structures ; injection of rocks from one body into the adjacent younger body has been noted in two areas ; thin, discontinuous septa of country rocks (in part granitised) usually separate the adjacent intrusive unit. The intrusions belong to at least three separate, but apparently closely related phases (closing date, *ca* 2000 m.y.) ; a later pegmatitic activity (1140 m.y.) occurred locally in the south-western part of the region.

A new technique for studying the areal composition variations in granitic bodies, *viz*. use of the 'Grid Deviation Maps' has been developed, and it promises to be of general applicability in the study of the genesis of granitic rocks. In addition, the usefulness of several simple statistical techniques, *viz*. linear correlation coefficients, *t*-tests, Kolmogorov-Smirnov tests, and analysis of variance, in the study of the genesis of granitic rocks has been demonstrated for the first time.

The extensive deposits of China clay associated with the granites in the Karanjia-Bhonda-Khorband region of Singhbhum District have been demonstrated to be of hydrothermal origin through field observations, X-ray, D.T.A., optical, sedimentological and model studies ; the trends of the mineralogical changes of the feldspars leading to the formation of the clays have been traced. The hydrothermal origin of the clay would mean that the clay deposits are not superficial and, at least, some of them should continue to considerable depths.

Drilling of these deposits to about 300 feet depth is, therefore, recommended for proving them for possible underground mining. The China clay deposits are located mostly in the regions where the composition of the granites tends towards the lowest melting compositions in the granite system. The present studies thus indicate the possibility of using the areal composition variations of the granitic rocks for locating promising China clay areas. Certain new prospective China clay areas, south of Khorband have been suggested as a result of these studies.

Several occurrences of muscovite in small to medium-sized books have been reported for the first time from the Singhbhum Granite area near Rairangpur and Onlajori in the Myurbhanj district.

This study, along with the studies carried out in other parts of the Singhbhum region by S. N. Sarkar and his associates, has contributed materially to a revision of the Pre-Cambrian stratigraphy and tectonics of the Singhbum region. Two distinct orogenic belts, with closing dates of the main activity around 2000 m.y. and 900 m.y. respectively, have been established. In addition, relics of older orogenic cycles dated around 3000 m.y. have also been recognised.—Dr A.K. Saha, Sarvashri S. K. Chabraborti, T. K. Bandyopadhyay, P.K. Raha & R.K. Biswas, Presidency College, Calcutta (Dec. 1, 1959-Feb. 29, 1964).

(*Contd from p. 1, col. 1*)

university (1927-30) and obtained the D.Sc. degree in 1931. Thereafter, he served as lecturer in Botany at the Ewing Christian College, Allahabad (1928-30), Agra College, Agra (1930-37), Allahabad University (1937-39), as Reader in Botany and Head of the newly started Biology Department and later Professor in the University of Dacca (1939-48). He joined the Delhi University as Professor and Head of the Department of Botany in 1949.

Professor Maheshwari visited Indonesia in 1952 and Egypt in 1954 at the invitation of Unesco, and visited USSR as a member of a Scientific Delegation sponsored by the Government of India. He was Visiting Professor at the University of Illinois in 1959. He visited Germany and England in 1961 and USA in 1964 where he gave lectures at many universities. He attended the sessions of International Botanical Congress held in 1950, 1954, 1959 and 1964 at Stockholm, Paris, Montreal and Edinburgh respectively in various capacities; he is the President of the International Society of Plant Morphologists for this year.

Professor Maheshwari has published about 250 research papers, and is the author of four books of which the last one is in preparation. He has been the recipient of Birbal Sahni Memorial Medal of the Indian Botanical Society in 1959 and the Hora Memorial Medal of the National Institute of Sciences of India in 1964. He is a member of several Indian and International Societies. He was President of the Botany Section of the Indian Science Congress in 1949 and President, Indian Botanical Society in 1951.

Printed and published by Shri S.A. Chari, Editor, Publications & Information Directorate (CSIR), Delhi-12, at Asia Press, Delhi-6.

R.N. 4212/5

CSIR NEWS

VOL. 15 APRIL 15, 1965 : CHAITRA 25, 1887 NO. 7

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MEETING

A meeting of the Executive Council of CSMCRI, Bhavnagar will be held on Aug. 27, 1965 at the Institute.

Cottonseed Flour Pilot Plant

A pilot plant producing half a tonne of cottonseed flour per day was commissioned by Dr Sushila Nayar, Union Health Minister on March 20, 1965, at the Regional Research Laboratory, Hyderabad. Addressing on this occasion, Dr Nayar said that children in India suffer from severe malnutrition. This is particularly unfortunate as the ill-effects that are caused in the growing period cannot be undone in later years. She said that there is not only the greatest need in India to attain self-sufficiency in food but it is even more important to provide balanced and nutritious food to growing children. Dr Nayar commended the efforts of the Laboratory in developing the edible cottonseed flour which will help in providing the much-needed proteins and amino acids and combating malnutrition among children.

RRL, Hyderabad—Dr G.S. Sidhu, Director, showing the various samples of cottonseed and cottonseed flour to Dr Sushila Nayar, Union Health Minister

TV Receiver Unit at CEERI

A pilot plant for the production of television sets and other electronic components was formally commissioned by Shri M.C. Chagla, Union Minister for Education and Vice-President, CSIR, on March 17, 1965 at the Institute. Inaugurating the unit, Shri Chagla commended the pioneering efforts of the Institute to bring television, hitherto costly, within the reach of the ordinary man. He said TV was the most important medium among mass communication media in the world. As Minister of Education, he attached greater importance to television for its important role in imparting education.

The unit is expected to attain an annual production capacity of 1000 TV sets with a thorough Indian know-how and with over 86 per cent indigenous components. The cost of the TV set has been estimated to be Rs 800 which is expected to be brought down further when the picture tubes could be fabricated in India. The unit is the first of its kind in India.

RESEARCH PROGRESS

National Laboratories

CSMCRI, BHAVNAGAR

Potassium chloride from Residue of Salt Petre Industry—The residue of salt petre industry contains an appreciable amount of potassium salts as potassium chloride and potassium sulphate which is rejected as a waste. A simple process has been worked out for the recovery of fertilizer grade potassium chloride based on the phase rule data. The residue is digested with the saturated solution of NaCl-KCl and the clear filtrate is cooled to room temperature when potassium chloride crystallises out. The saturated NaCl-KCl solution is recycled for the extraction of potassium chloride in the next batches. As the potassium sulphate builds up in the recycling solution, it crystallises out along with potassium chloride. The final product contains 60 per cent K_2O consisting of 89 per cent KCl and 7.6 per cent K_2SO_4. The presence of potassium sulphate in the recycled product is not objectionable

(*Contd on p. 4, col. 1*)

BRIEFS

PID Executive Council

Dr Nihar Ranjan Ray, M.P. has been nominated Chairman of the Executive Council of the Publications & Information Directorate, CSIR, New Delhi.

SEMINAR

A one-day seminar on Engineering Problems in Assam and other adjacent areas is being organised at the Regional Research Laboratory, Jorhat on April 20, 1965.

Micro-Metallurgy

A symposium on 'Micro-metallurgy—the role of minute additions to ferrous and non-ferrous metals and alloys', was held at NML, Jamshedpur during March 29-April 1, 1965. The symposium was organised with a view to focus attention on multitude aspects of micro-metallurgy and to provide an international forum to discuss the role of minute additions to ferrous and non-ferrous metals and alloys and to exchange technical know-how. Shri Asoka Mehta, Deputy Chairman, Planning Commission inaugurated the symposium. Shri Jehangir Ghandy, Chairman, Executive Council, NML, presided. Shri M.S Rao, Chairman, Hindustan Steel Ltd and Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research also addressed the gathering.

Twenty-nine technical papers covering various facets of micro-metallurgy were presented and discussed in five technical sessions. Many Indian and foreign delegates attended the symposium. Synopses of the technical papers presented and discussed at the symposium have been printed.

Lightweight Concrete

A seminar on Lightweight Concrete was held at the Central Building Research Institute, Roorkee on March 26, 1965. In all, four papers: Development of Lightweight Aggregate and Concrete Industry in India; Lightweight Structural Concrete; Prospects for Lightweight Concrete; and Comparison of Codes of Practices on Lightweight Concrete were presented and discussed.

About 200 scientists and engineers including delegates from the University of Roorkee, Irrigation Research Institute and Bengal Engineer Centre and Group participated in the seminar.

CFTRI, Mysore

The Institute organised short-term courses on Packaging, Storage and Preservation of Fruits and Vegetables at the instance of the Agricultural Marketing Adviser, Government of India, Ministry of Food and Agriculture. The first such course was conducted for a batch of twelve trainees during Dec. 1-19, 1964 and another for seven trainees during March 15-31, 1965.

Endeavour Prizes

The Imperial Chemical Industries Ltd have offered prizes totalling 100 guineas (a prize each of 50, 25, and 15 and two of 5 guineas) for the best essay on the following topics with a view to stimulate younger scientists to take an interest in the work of the British Association and to raise the literary standard of scientific writing: (i) Physics of the moon, (2) Physiological basis of memory, (3) Molecular sieves, (4) Chemicals from oils, (5) Mechanisms of emzyme action, and (6) Strength of materials.

The competition is restricted to those whose twenty-fifth birthday falls on or after Sept. 1, 1965 for the first three prizes. The other two prizes are for competitors who have not passed their eighteenth birthday on Sept. 1, 1965.

The essays, which must be in English and typewritten, should not exceed 4000 words in length and only one entry is permitted from each competitor.

All entries should be addressed to: The Deputy Secretary, British Association for the Advancement of Science, 3 Sanctuary Buildings, Great Smith Street, London, S.W.I., and the envelope should be clearly marked "ENDEAVOUR PRIZE ESSAY".

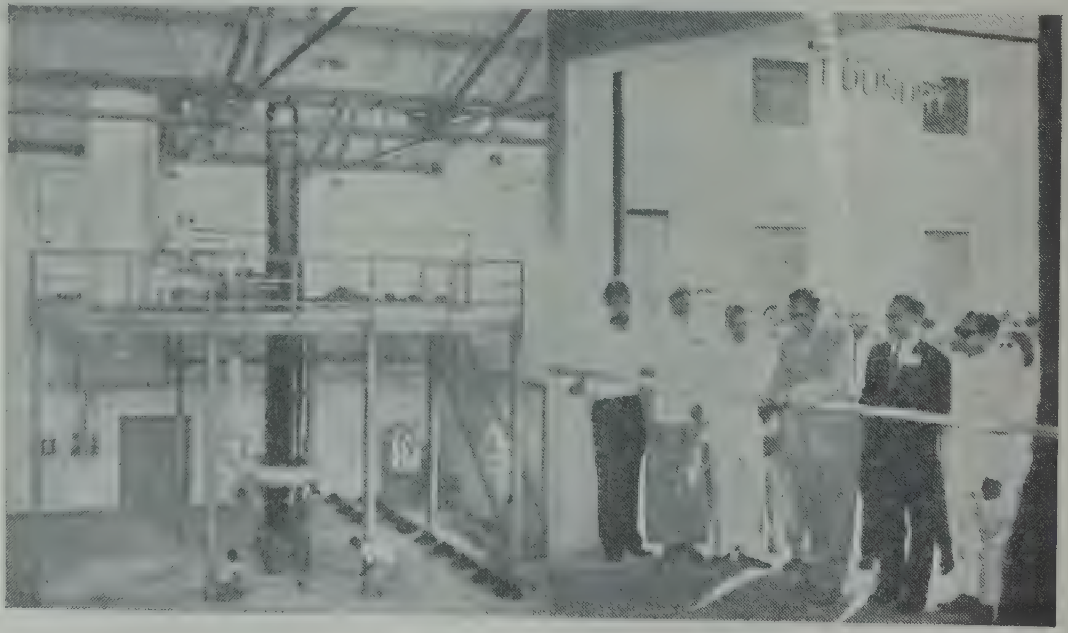
New Foundry Block

A new foundry block of the National Metallurgical Laboratory was opened by Shri Asoka Mehta, Deputy Chairman, Planning Commission on March 29, 1965. Equipped with modern machineries for moulding, melting and casting, it will provide most up-to-date research facilities in the field of foundry. A hot blast cupola fitted with a special device to utilise the heat of the exhaust gases to pre-heat the air blast, has been installed in this block at a cost of Rs one lakh. Designed and fabricated at the Laboratory, it will raise the temperature of the air blast to 500 degrees without using coke. The cupola has been so designed that it can be easily fitted on even to the existing cold blast cupolas in foundries.

Visitors

Shri Pattom Thanu Pillai, Governor of Andhra Pradesh visited RRL, Hyderabad on March 6, 1965.

Eleven senior journalists representing important Indian dailies and five officers from United States Information Service and U.S. Agency for International Development visited CFRI, Jealgora on March 12, 1965.



NML, Jamshedpur—Shri Asoka Mehta, Deputy Chairman, Planning Commission, opening the new Foundry Block of the Laboratory on March 29, 1965

STAFF NEWS

Appointments

Sarvashri V. Panduranga, L. Krishnamurthy, V. Ramaniah, R.V. Ramachandran, N.C.F. Shah, S. Natrajan, J.V.S. Iyengar & Rajendra Prashad—Scientists, CMERI, Durgapur (March 4, 1965).

Shri Chandra Mohan, Scientist, CMERI, Durgapur (March 8, 1965).

Dr (Mrs) Nirmal Sethi, Pool Officer, CDRI, Lucknow (March 8, 1965).

Shri M.S. Kothari, Scientist, RRL, Jorhat (March 15, 1965).

Shri T.V. Ramamurthi, Scientist, NPL, New Delhi—Consultant to Compagnie Generale de Telegraphic Sans Fill, in addition to his duties (March 27, 1965).

Shri A.K. Agarwala, Scientist, RRL, Jorhat (March 31, 1965).

Resignations

Dr K. Krishnamurthy, Scientist, CFTRI, Mysore (Feb. 26, 1965).

Dr S.V. Ganapati, Officer-on-Special Duty and Officer-in-charge, Ahmedabad Field Centre of CPHERI, (March 12, 1965).

Nominations

Shri M.M. Suri, Director, CMERI, Durgapur—Member, Development Council of the Ministry of Industry and Indian Railway Equipment Advisory Committee of Ministry of Railways, New Delhi.

Shri R.S. Mehta, Director, CPHERI, Nagpur—Member, Committee to enquire into the causes of contamination of Delhi's water supply, constituted by Ministry of Health.

Dr M.G. Krishna, Director, IIP, Dehra Dun—Member, Expert Committee to examine the question of the use of solvent extracted vegetable oils in the manufacture of vanaspati and refined oil of the Ministry of Health.

Dr K.N. Sinha, Director, CMRS, Dhanbad—Member, Explosive Committee of the Ministry of Steel and Mines.

Dr H.A.B. Parpia, Director, CFTRI, Mysore—Chairman, Sub-Committee of the Indian Central Coconut Committee of the Ministry of Food and Agriculture.

Dr K.S.G. Doss, Director, CECRI, Karaikudi—Member, Metallurgical and Chemical Engineering Research Sub-committee of the Central Board of Railway Research, Research Designs and Standards Organizations, Lucknow.

Dr B.L. Amla, Scientist, CFTRI, Mysore—Member, Managing Committee of the Chamber of Commerce and Industry, Mysore.

Dr U.Y. Rege, Scientist, CFTRI, Mysore—Member, Hill Development Advisory Committee - Agro-Industries, Ministry of Food and Agriculture.

Shri H. Rajasekharan, Scientist, CFTRI, Mysore—Member, Sub-committee of the Indian Central Coconut Committee of the Ministry of Food and Agriculture.

Dr N.G. Basak, Scientist, CFRI, Jealgora—Member, Reviewing Committee of the Planning and Development Division, Fertilizer Corporation of India Ltd, Sindhri.

Deputations

Dr O.P. Srivastava, Scientist, CDRI, Lucknow proceeded to U.S.S.R. on March 27, 1965 for training in the field of Microbiology under USSR Cultural Exchange Programme, 1964-65.

Shri S.K. Ghose, Curator, BITM, Calcutta returned to Calcutta on March 29, 1965 after completing his studies at Harvard University, U.S.A. He also undertook six months training in different science museums in U.S.A., Europe & U.S.S.R.

Honours & Awards

Dr N.G. Basak, Scientist, CFRI, Jealgora has been elected a Fellow of the Institution of Chemists (India).

Shri Tapan Dutta, Senior Research Fellow, CSIR Scheme, Bengal Immunity Research Institute, Calcutta—Ph. D. (Calcutta University); thesis : *Chemical investigation on Brahmis and Balas.*

Shri S. P. Singal, Scientist, NPL, New Delhi—Ph.D. (Banaras Hindu University); thesis : *Ultrasonic studies in aqueous solution of electrolytes* (Guide : Dr M. Pancholy).

Shri D. C. Roy, Officer in charge, Field Station, Calcutta, Indian Plywood Industries Research Association—D. Phil. (Calcutta); thesis : *Development of plywood adhesives under Indian conditions* (Guide : Prof. S. R. Palit)

Shri Ved Prakash, Scientist, NML, Jamshedpur—Ph.D. (Panjab); thesis: *Studies on age hardening.*

Shri M. Vittal Rao, JRF, CPHERI, Nagpur—Ph.D. (Sri Venkateshwara University, Tirupati), thesis : *Studies on root-infecting fungi with special reference to microbial antagonisms* (Guide : Dr A.S. Rao).

Shri V.V. Subba Rao, NCL, Poona—Ph. D. (Poona University), thesis : *Studies of the preparation of active solids by thermal decomposition* (Guide : Dr A.B. Biswas).

Shri S.K. Chopra, Scientist, CBRI, Roorkee—Ph.D. (Roorkee University) ; thesis : *Physical properties of cementitious materials in relation to hydration products formed* (Guide : Dr. W.U. Malik).

Shri Ramesh Chandra Misra, Senior Research Fellow, NBG, Lucknow—Ph.D. (Agra University); thesis : *Morphological studies in Plantago* Linn.

Research Papers

Chakrabarty, S.K. & Roy Choudhury, S.N. (University College of Science, Calcutta)—Response characteristics of electromagnetic seismographs. *Bull. Seis. Soc. Amer.*, **54** (1964), 1445-58.

Chakrabarty, S.K , Choudhury, G.C. & Roy Choudhury, S.N. (University College of Science, Calcutta) —Magnification curves of electromagnetic seismographs. *Bull. Seis. Soc. Amer.*, **54** (1964), 1959-71.

Mathur P.B. & Paul Nityanandan, J. (CECRI, Karaikudi)—Magnesium Copper sulphate water activated Batteries. *J. Electrochem. Soc. India*, **13** (4) (1964), 101-106.

Siddiqi M. Rafiq & Zahid Husain (Aligarh Muslim University, Aligarh)—Three new species of nematodes in family hoplolaimidae found attacking citrous trees in India. *Proc. helm. Soc. Washington*, **31** No. 2 (1964).

Raychoudhury, B.C., Ali, S. & Garg, D.P. (CBRI, Roorkee)—Indoor climate of residential buildings in hot arid regions. *Build. Sci. U.K.*, **1** (1965), 79-88.

Tilak, B.V.K.S.R.A., Rajagopalan, S.R. & Reddy, A.K.N. (CECRI, Karaikudi)—The influence of sulphur dioxide on the rural and partial cement potential curves for the electrodeposition of manganese. *Roczniki Chem*, **38** (1964), 673.

NOTIFICATION

The Post of Director-in-charge of Tocklai Experimental Station of the Tea Research Association, Cinnamara, Assam, (near Jorhat) will shortly become vacant. The Association with the assistance of the Council of Scientific and Industrial Research, carries out and promotes research and other scientific work connected with the cultivation, production and processing of tea in North India, for the benefit of its members. The Director-in-charge of the Station, is responsible for co-ordinating and developing tea research through a number of branches, namely Physico-Chemistry, Botany, Agriculture, Plant Protection, Bio-chemistry, Tea Tasting & Manufacturing, Engineering Development, Statistics and Advisory. Qualified scientists with knowledge of tea who wish to be considered for this appointment are invited to send an application to the Chairman, Tea Research Associasion, c/o. The Bengal Chamber of Commerce & Industry, Royal Exchange, 6, Netaji Subhas Road, Calcutta-1, India, to arrive on or before April 30, 1965. Others who may wish to send a nomination for this post may kindly forward their proposals to the Chairman, Tea Research Association, before the closing date.

There is no standard form of application and all communications will be treated as strictly confidential.

RESEARCH PROGRESS

(*Contd from p. 1, col. 3*)

for fertiliser use. By this process, it is possible to recover about 1,000 tonnes of fertiliser grade potassium chloride from the 3000 tonnes of the rejected by-product residue of salt petre industry—J.M. Joshi & K. Seshadri.

IIBEM, CALCUTTA

New Trend in Cholera Epidemiology — Systematic phage-typing studies of agglutinable vibrio strains isolated in recent epidemics have been carried out at the Institute. These indicate that the pandemic of cholera El Tor has spread within the last one year to widely scattered areas in the Indo-Pakistan sub-continent, wherein classical cholera due to *Vibrio cholerae* has remained limited during recent years. *In vitro* and *in vivo* studies have further proved that El Tor vibrios, the causative organism of cholera El Tor, can eliminate *V. cholerae*, the micro-organisms of classical cholera; within a short time when both are grown in mixed culture. The biological effects of this antagonism would appear to be far-reaching on the epidemiology of classical cholera, thus by the end of 1964, there was only one case of classical cholera for every ten cases of cholera El Tor in Calcutta. However, in view of its greater endemic potentialities due to wider and speedier dissemination than classical cholera, cholera El Tor may present problems which are likely to be more difficult to control and the danger of early westward spread beyond the borders of the sub-continent appears real—S. Mukerjee, S. Basu & P. Bhattacharya.

CMERI, DURGAPUR

Flake and Pack Ice Plant—Flake and pack ice plants are now being manufactured on a commercial scale for the first time in India by Kirloskar Pneumatic Company Ltd, Poona. The plant was designed and developed by the Central Mechanical Engineering Research Institute, Durgapur, in collaboration with Kirloskars and can produce dry flakes and pack ice within 10-15 minutes of switching on the plant. The ice flakes which are dry and subcooled, are then produced continuously. These package ice plants are now available in two sizes, 3½-ton and 5-ton capacity per day.

Ice is used in the form of flakes for preservation of fruits, vegetables, fish, meat, poultry and other foods. Flake ice is also used for concrete cooling, chemical processes, pharmaceuticals, bottle cooling in dairies, and insulated vans. Flake ice is not available in the dry form normally, and was hitherto obtained by crushing or grating block ice.

RRL, JORHAT

Recovery of Sulphur from Assam Coal—A method has been developed for the recovery of sulphur from the flue gases obtained during the combustion of Assam coals which holds out great possibilities. In this method, the flue gases are dried to remove moisture and then scrubbed with Iomex which selectively absorbs the sulphur dioxide. The efficiency of absorption increases with decrease of temperature. Liquid sulphur dioxide is obtained by stripping the used Iomex.

The details of a recovery unit are being worked out and will be used as an adjunct to the 250 tons/day Assam Cement plant at Cherrapunji, which is scheduled to burn Garo Hills coal of 4-5 per cent sulphur content.

Sponsored Research

Adrenal Steroids and Vitamin C in Relation to Diabetes—Studies on guinea pigs and monkeys have shown that scurvy is associated with defects in carbohydrate and lipid metabolism. Small doses of insulin during the progress of scurvy have been found to correct many of the derangements in metabolism. Increased adrenal cortical activity has also been found in scurvy but it seemed to be a specific effect of vitamin C deficiency and was not mediated through the associated insulin insufficiency.

The effect of adrenaline, ACTH, hydrocortisone, desoxycorticosterone and inanition on the excretion of 17-ketosteroids in scorbutic guinea pigs has been studied. The study suggests that the increased excretion of 17-ketosteroids in scorbutic animals was due to the accumulation of adrenaline in the adrenal medulla in these animals which stimulated the hypothalamus, which in turn through hypothalamo-hypophysial portal circulation stimulated the anterior pituitary for the secretion of ACTH. This ACTH caused the increage in the excretion of 17-ketosteroids.

The rate of absorption of glucose was doubled in the intestine of scorbutic guinea pigs in comparison to normal. Insulin treatment of the scorbutic animals did not alter markedly the glucose absorption observed in scorbutic condition.

PATENTS

Filed

96017 : *Production of high purity iron powders*—Santokh Singh Dhanjal, Prabhakar Krishna Gupta & Bal Raj Nijhawan, NML, Jamshedpur.

97191 : *One lung twin glazer*—T. Ramanathan, CLRI, Madras.

Belgium

44269 : *Processing of dry ready to wet sausage casings from cattle, goat, sheep, pig and other mammalian intestines*—S. K. Barat, CLRI, Madras.

Accepted

88214 : *A new clinching device to seal fibre straps on packages*—P. Veerraju, CFTRI, Mysore.

Sealed

82822 : *A process for the manufacture of high alpha cellulose dissolving grade pulps by alkaline pulping methods*—G.M. Vyas, D.S. Bendale, & M.B. Mahajan, NCL, Poona.

Printed and published by Shri S.A. Chari, Editor, Publications & Information Directorate (CSIR), Delhi-12, at Asia Press, Delhi-6.

CSIR NEWS

VOL. 15 APRIL 30, 1965 : VAISAKH 10, 1887 NO. 8

Governing Body and Board Meetings

A meeting of the Board of Scientific and Industrial Research will be held in Vigyan Bhawan, New Delhi on May 5, 1965 at 9.30 a.m. Shri Lal Bahadur Shastri, Prime Minister and President, CSIR will preside.

A meeting of the Governing Body will be held in Vigyan Bhawan, New Delhi on May 6, 1965 at 9.30 a.m. Shri Lal Bahadur Shastri, Prime Minister and President, CSIR will preside.

STAFF NEWS

Appointment

SHRI J.P. KAUSHIKH, Scientist, CBRI, Roorkee (Feb. 27, 1965).

Nominations

DR K.N. SINHA, Director, CMRS, Dhanbad—Expert Member, Faculty of Technology, Banaras Hindu University, Varanasi.

PROF. DINESH MOHAN, Director, CBRI, Roorkee—Member and delegate to RILEM, Paris & Member, Study Group on Productivity in Construction Industry of the National Productivity Council, New Delhi.

Deputations

DR B.R. NIJHAWAN, Director, NML, Jamshedpur proceeded to Japan on April 3, 1965 for participation in the 50th Anniversary Annual Technical Meeting of the Japan Iron & Steel Institute.

SHRI B.S. KESAVAN, Director, Insdoc, New Delhi attended the third session of the International Advisory Committee on Bibliography, Documention and Terminology of the Unesco held at Moscow during April 6-9, 1965.

SHRI R.S. MEHTA, Director, CPHERI, Nagpur attended the WHO Expert Committee Meeting on Water Pollution Control, held at Geneva during April 6-12, 1965.

RESEARCH PROGRESS

CGCRI, CALCUTTA

Synthesis of Quartz Monocrystals—Quartz monocrystals approximately one inch in diameter have been successfully made following a high-pressure thermal gradient technique. A stainless steel autoclave was designed and fabricated for the purpose. The crystals were grown on suitably cut selected seed plates from nutrient aggregate of quartz in an aqueous alkali carbonate medium. They were colourless and transparent, chemically pure and physically flawless except for a few closed channels and thin stringers near the surface.

CPHERI, NAGPUR

Treatment of Effluents from Raw Movie Film Factory—The problem of making the effluents, during processing of raw movie film by a factory, at present under erection, innocuous before discharging into a nullah, has been studied. The factory is expected to produce three types of effluents known as emulsion wash water (containing mostly inorganic salts). white water (consisting mainly of organic chemicals and cyanine dyes) and laboratory effluent (containing inorganics and considerable quantities of toxic organics such as hydroquinone and metol) in the proportion 28:2:15.

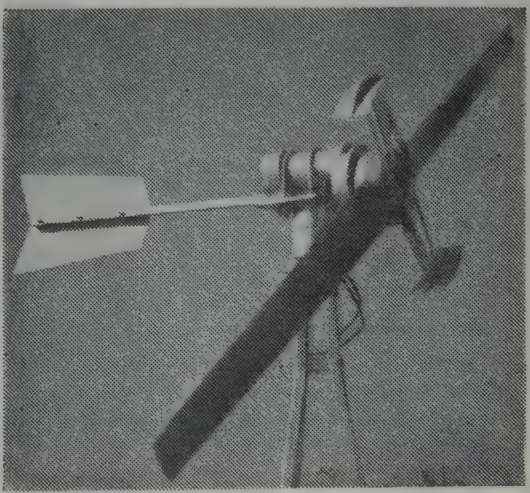
Of these, the laboratory effluent was found to be most toxic and white water least toxic to fish. The toxicity of emulsion wash water (most voluminous of the three) which was traced to its free ammonia content could be significantly removed by lowering the *p*H to neutral.

On treating the composite waste with an optimum chemical dose (500 mg./litre of aluminium sulphate), toxicity and colour of the waste were reduced by factors of 4 and 2 respectively. By suitable acclimatisation, mixed bacterial cultures were developed which destroyed 80-90 per cent of the organic matter. The toxicity of the effluent was reduced by diluting with water to 2 to 3 times and then supplementing it with phosphates. Experiments to treat higher concentrations of the waste, by the same biological process are in progress.

18-5-65
LIBRARY

NAL, BANGALORE

Wind Electric Generator—A 12-V. d.c., 250-W. wind electric generator has been developed which can meet the power demands, where low power supply is needed, as in the case of ground communication links. The generator consists of a two-bladed fixed-pitch type propeller of diam. 2.2 m., gear box, generator and regulator. The blade angle varies from 17° at the root to 5° at the tip. The generator is connected to the propeller through a gear box of step up ratio 1 : 4. The generator starts working at a wind speed of 14 km. p.h. and delivers the rated output of 250 W. at 25 km. p.h. In order to obtain the rated output at a lower wind speed (19 km.p.h.) a 12-ft diam. propeller with four blades and a gear ratio of 1 : 6 has also been designed. These generators can run unattended for long periods and will be cheaper than a diesel set of equivalent capacity, besides solving problems like transporting fuel. They can be mounted on light lattice towers. The generators together with storage batteries can be used to meet the power requirements of solid state multi-channel, microwave radio links and H.F. medium range radio links in their static role, requiring power inputs of less than 250 W.



NAL, Bangalore—Wind electric generator developed at the Laboratory

BRIEFS

Seminar

A three-day Seminar on Scientific and Technical Translation was organised by the Insdoc at New Delhi during April 15-17, 1965. The Seminar was inaugurated by Dr Nihar Ranjan Ray, M.P. Sixty-five delegates from CSIR laboratories, research institutes, universities, Atomic Energy Establishment, Indian Statistical Institute, Defence Science Laboratory, IASLIC, National Institute of Sciences of India and others attended the Seminar. In all 40 papers were read and discussed in six sessions.

The following are some of the important recommendations made at the Seminar with the object of augmenting the facilities currently available for technical translation: Institution of translation cells at the scientific and research organisations; Establishment of regional and central translation pools; Provision for incentives to scientists in recognition of their competence in foreign languages other than English; and Intensive study of the problems of mechanical translation. The Seminar also recommended that possibilities should be explored for trilingual abstracting of articles published in Indian periodicals, with a view to adopting the practice prevalent in international journals.

Microwave Devices and Systems

A three-day symposium on Microwave Devices and Systems was inaugurated by Shrimati Indira Gandhi, Union Minister for Information and Broadcasting at Central Electronics Engineering Research Institute, Pilani, on March 20, 1965. Speaking on the occasion, Shrimati Indira Gandhi emphasized the role of science and technology for meeting the challenge of poverty and commended the progress of research and development work at the Institute, particularly on Television Receivers.

Thirty-nine papers covering fundamental and applied aspects of microwaves were presented and discussed in six sessions, namely Microwave Systems, Microwave Solid State Devices, Microwave Tubes, Microwave Measurements, Microwave Transmission Lines and Antennae, and Microwave Components. More than 100 scientists and engineers from research institutions, Defence Services, industrial organizations and universities attended the symposium. The proceedings of the symposium will be published in a special issue of the Journal of the Institution of Telecommunication Engineers (India).

New Editorial Advisory Committee of Science Reporter

A new Editorial Advisory Committee of the Science Reporter has been formed with: Shri Jagjit Singh, Director, Traffic, Railway Board, New Delhi as Chairman and Shri Shamlal, Prof. L.S. Kothari, Shri G.H. Keshwani, Shri A.K. Mustafy, Shri A. Rahman, Dr Anil K. De and Shri S.P. Ambasta as members.

Visitors

Dr G. G. Mukhin of Friendship University, Moscow visited CMERI, Durgapur on March 9, 1965 and delivered a lecture on 'Advances in the chemical and thermal treatment of machine components'.

Maj. W.D. Patrass of Australian Army visited CBRI, Roorkee on March 20, 1965.

Prof. V.V. Sokolovsky, Academician Professor of USSR, visited CBRI, Roorkee on March 30, 1965 and delivered a lecture on 'Settlement studies for building foundations, a theoretical approach'.

Dr Arthur P. Lien & Dr Donald D. Evans, Scientists, Battelle Memorial Institute, USA visited CBRI, Roorkee on March 30 & 31, 1965.

Mr F.G.R. Cooke, Head of the Central Secretariat of the Commonwealth Defence Science Organisation, London, visited the Wind Tunnel Centre, NAL, Bangalore on March 31, 1965.

Prof V.F. Stepanchuk, Unesco Expert & Prof. V.R. Soldatenko, Visiting Professor, Indian Institute of Technology, Bombay, visited CMERI, Durgapur on April 1 & 2, 1965 and delivered a series of lectures in the field of 'Heat power engineering and machine building'.

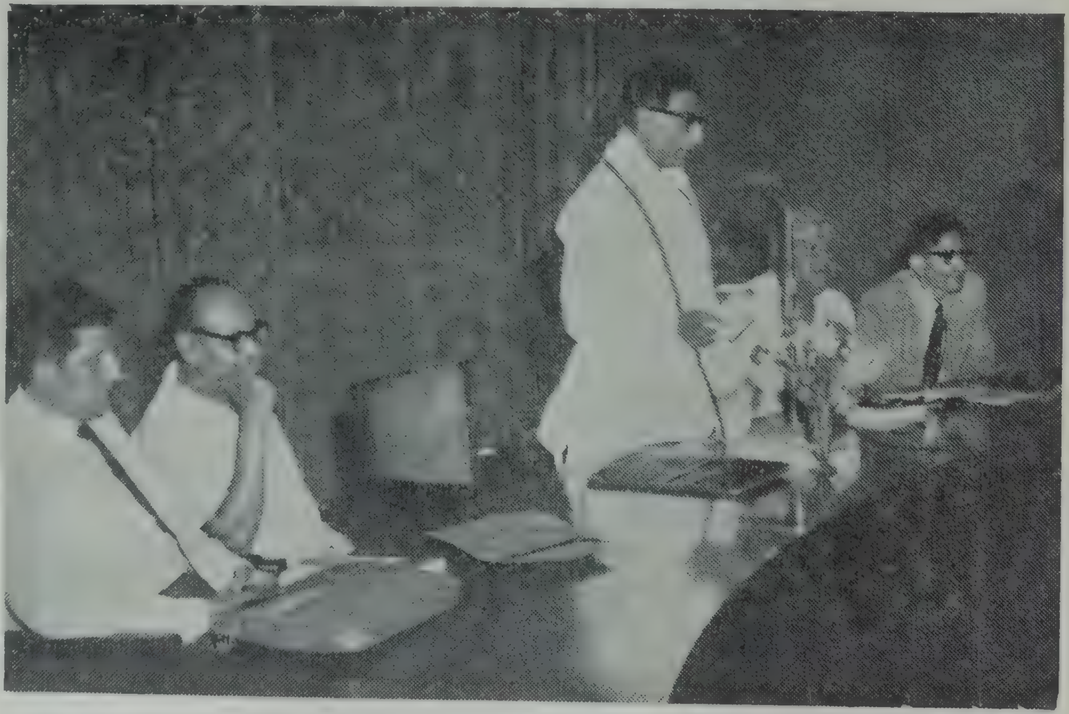
Prof. V.I. Pavlov, of USSR visited BITM, Calcutta on April 10, 1965.

Lectures at NCL, Poona

Prof. C.E. Dryden, Visiting Professor of USA—Fuel cell in research (March 11, 1965) & Chemical reaction in plasma jets (March 12, 1965).

Prof. B.M. Johri, Delhi University, Delhi—Application of tissue cultures in research (March 15, (1965).

Prof. A.J. Khorlin, Visiting Professor of USSR—Natural products (March 30, 1965).



Insdoc, New Delhi—Dr Nihar Ranjan Ray, M.P., inaugurating the Seminar on Scientific Translation at the NPL auditorium on April 15, 1965. Seated on the dais from left to right are Prof. Harry Spitzbardt, Prof. P.N. Banerjea, Shri B.S. Kesavan & Shri M.S. Dandekar.

GOVERNING BODY & BOARD RECONSTITUTED

The Government of India have notified that for the purposes of the Societies Registration Act (XXI of 1860), the Governing Body of the Council of Scientific and Industrial Research and the Board of Scientific and Industrial Research have been reconstituted for a period of three years with effect from April 1, 1965 and shall consist of the following :

Governing Body

1. Shri Lal Bahadur Shastri,
   Prime Minister of India
   (*President*)
2. Shri M.C. Chagla,
   Minister of Education,
   New Delhi (*Vice President*)
3. Dr S. Husain Zaheer,
   Director-General,
   Scientific & Industrial Research,
   New Delhi
4. Shri T.T. Krishnamachari,
   Minister of Finance,
   New Delhi
5. Shri C. Subramaniam,
   Minister of Food & Agriculture,
   New Delhi
6. Prof. Humayun Kabir,
   Minister of Petroleum &
   Chemicals,
   New Delhi
7. Shri T.N. Singh,
   Minister of Heavy Engineering
   in the Ministry of Industry and
   Supply, New Delhi
8. Shri Asoka Mehta,
   Deputy Chairman,
   Planning Commission,
   New Delhi
9. Dr V.K.R.V. Rao,
   Member,
   Planning Commission
   New Delhi
10. Shri A.K. Ghosh,
    Secretary,
    Ministry of Education,
    New Delhi
11. Shri K.N. Channa,
    Financial Adviser to CSIR,
    C/o Ministry of External Affairs,
    New Delhi
12. Dr S. Bhagavantam,
    Scientific Adviser to the
    Minister of Defence,
    New Delhi
13. Dr D.N. Wadia, FRS,
    Geological Adviser,
    Department of Atomic Energy,
    New Delhi
14. Prof. P.C. Mahalanobis, FRS,
    Member,
    Planning Commission,
    New Delhi
15. Dr M.S. Randhawa,
    Director-General,
    Intensive Agricultural Areas &
    Special Secretary,
    Ministry of Food & Agriculture,
    New Delhi
16. Prof. P. Maheshwari, FRS,
    Head of the Department of
    Botany,
    University of Delhi,
    Delhi
17. Dr D.S. Kothari,
    Chairman,
    University Grants Commission,
    New Delhi
18. Shri J.R.D. Tata,
    Chairman,
    Tata Industries (P) Ltd,
    Bombay
19. Shri K.K. Birla,
    15, India Exchange Place,
    Calcutta
20. Shri Arvind N. Mafatlal,
    Mafatlal House,
    Backbay Reclamation,
    Bombay
21. Dr H.J. Bhabha, FRS,
    Secretary,
    Department of Atomic Energy,
    Bombay
22. Dr Satish Dhawan,
    Director,
    Indian Institute of Science,
    Bangalore
23. Dr V.R. Khanolkar,
    National Professor,
    Cancer Research Institute,
    Bombay
24. Dr T.S. Subramanian,
    Director,
    Ahmedabad Textile Industry's
    Research Association,
    Ahmedabad
25. Dr Triguna Sen,
    Vice-Chancellor,
    Jadavpur University, Calcutta
26. Dr A. Ramaswami Mudaliar,
    India Steamship House,
    Calcutta
27. Shri J.J. Ghandy,
    Resident Director,
    Tata Iron & Steel Co. Ltd,
    Jamshedpur
28. Shri S.L. Kirloskar,
    Chairman,
    Kirloskar Engineering Co.,
    Poona
29. Shri P.A. Narielwala,
    Director,
    Tata Industries (P) Ltd,
    Bombay
30. Dr K.A. Hamied,
    Chairman,
    CIPLA Laboratories,
    Bombay
31. Dr Vikram A. Sarabhai,
    Physical Research Laboratory,
    Ahmedabad
32. Prof S.N. Bose, FRS,
    National Professor,
    22, Iswar Mill Lane,
    Calcutta
33. & 34. Two representatives of
    Board of Scientific & Industrial
    Research

Board

1. Shri Lal Bahadur Shastri,
   Prime Minister of India
   (*President*)
2. Shri M.C. Chagla,
   Minister of Education,
   New Delhi (*Vice-President*)
3. Dr S. Husain Zaheer,
   Director-General,
   Scientific & Industrial Research,
   New Delhi
4. Dr S. Bhagavantam,
   Scientific Adviser to the
   Minister of Defence,
   New Delhi
5. Maj. Gen. J.R. Samson,
   Chief Controller,
   Research & Development
   Organisation,
   Ministry of Defence,
   New Delhi
6. Shri P.C. Kapur,
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   New Delhi
9. Dr A. Nagaraja Rao,
   Adviser (Resources),
   Planning Commission,
   New Delhi
10. Dr B.P. Pal,
    Director,
    Indian Agricultural Research
    Institute,
    New Delhi

11. Col. B.L. Taneja,
Director,
Indian Council of Medical Research,
New Delhi

12. Dr M.S. Swaminathan,
Head of the Department of Botany,
Indian Agricultural Research Institute,
New Delhi

13. Prof. P.C. Mahalanobis, FRS,
Member,
Planning Commission,
New Delhi

14. Dr D.S. Kothari,
Chairman,
University Grants Commission,
New Delhi

15. Dr H.J. Bhabha, FRS,
Secretary,
Department of Atomic Energy,
Bombay

16. Dr T.R. Govindachari,
Director,
CIBA Research Centre,
Bombay

17. Prof. B.D. Tilak,
Department of Chemical Technology,
Bombay University,
Bombay

18. Dr Satish Dhawan,
Director
Indian Institute of Science,
Bangalore

19. Prof. Santi R. Palit,
Indian Association for the Cultivation of Science,
Calcutta

20. Shri B.V. Baliga,
Managing Director,
Bharat Electronics Ltd,
Bangalore

21. Dr S.K. Mukherjee,
General Manager,
Rourkela Fertilizer Plant,
Rourkela

22. Dr A.R. Kidwai,
Professor and Head of the Department of Chemistry,
Aligarh Muslim University,
Aligarh

23. Dr Gurbaksh Singh,
Professor and Head of the Department of Chemistry,
Banaras Hindu University,
Varanasi

24. Prof. R.C. Mehrotra
Professor and Head of the Department of Chemistry,
Rajasthan University,
Jaipur

25. Dr M. Narasinga Rao,
Prof. of Chemical Engineering,
Indian Institute of Technology,
Kharagpur

26. Dr A. Ramachandran
Prof. of Mechanical Engineering,
Indian Institute of Science,
Bangalore

27. Shri P.R. Ramakrishnan,
Principal,
Coimbatore Institute of Technology,
Coimbatore

28. Dr Y. Nayudamma,
Director,
Central Leather Research Institute, Madras

29. Dr B.R. Nijhawan,
Director,
National Metallurgical Laboratory, Jamshedpur

30. Dr A.R. Verma,
Head of the Department of Physics, Banaras Hindu University, Varanasi

31. Dr Amarjit Singh,
Director,
Central Electronics Engineering Research Institute,
Pilani

32. Shri K. Sreenivasan
Director, South India Textile Research Association,
Coimbatore

33. Shri Darbari S. Seth,
General Manager,
M/s. Tata Chemicals Ltd.,
Mithapur, Okhamandal

34. Prof. S.N. Bose, FRS,
National Professor,
22, Ishwar Mill Lane,
Calcutta

35. Dr T.S. Subramanian,
Director,
Ahmedabad Textile Industry's Research Association,
Ahmedabad

36. Dr Triguna Sen,
Vice-Chancellor,
Jadavpur University,
Calcutta

Service Facility at NPL

The National Physical Laboratory, New Delhi has organised a Service Facility for laboratory type portable electrical, electronic, electromechanical and optical instruments excluding appliances. Hospitals, public and semi-public institutions, industrial establishments and other actual users of such equipment are invited to make use of this service. Also proper use of new equipment can be explained to the users.

Instructions for sending instruments for servicing, etc. may be obtained from the Officer-in-charge, Instrumentation & Servicing, Room No. 222 (Phone 57161 ext. 41) National Physical Laboratory, New Delhi-12

PATENTS

Filed

97444: *Design of a vacuum whirler for applying thin and uniform coating of an emulsion on water*—K. S. Balain & Inderjeet Singh, CEERI, Pilani.

U. K.

5683/65: *Anodic phosphating*—K. S. Rajagopalan & B. Dandapani, CECRI, Karaikudi.

Accepted

86638: *A process for the preparation of 2-isopropenyl hexanols*—Suryakumari Ramaswami, S. K. Ramaswami & S. C. Bhattacharyya, NCL, Poona.

Sealed

Switzerland

383993: *Production of 4-hydroxycoumarin and its derivatives*—V.R. Shah, J. L. Bose & R.C. Shah, NCL, Poona.

NOTIFICATION

It is proposed to appoint a Director for the National Botanic Gardens, Lucknow, its main functions are:

(i) Introduction, Cultivation and Propagation of plants of economic and medicinal value;
(ii) Cultivation and propagation of ornamental plants;
(iii) Setting up herbaria;
(iv) Setting up of Botanic Museum, especially with refrence to plants of economic value;
(v) Organisation of botanic gardens in different States;
(vi) Supply of plants and exchange with other Institutions in India and abroad; and
(vii) Botanical Research with reference to plant taxonomy, anatomy etc., and horticultural research with reference to floriculture and other plants of economic and medicinal value.

There is no standard form of application. Those who wish to be considered are invited to send their curriculum vitae to the Director-General, Scientific and Industrial Research. Others who may wish to send nomination for the post may kindly forward their proposals to the Director-General.

All communications will be treated *Confidentially*. Statements and proposals will be received by the Director-General on or before May 31, 1965 at the office of the Council of Scientific & Industrial Research, Rafi Marg, New Delhi-1.

Printed and published by Shri S.A. Chari, Editor, Publications & Information Directorate (CSIR), Delhi-12, at Asia Press, Delhi-6.

R.N. 4212/5.

CSIR NEWS

VOL. 15 MAY 15, 1965 : VAISAKH 25, 1887 NO. 9

LIBRARY

GOVERNING BODY DECISIONS

The Board and Governing Body of the Council of Scientific & Industrial Research met in New Delhi on May 5 & 6, 1965.

The following are the important proposals or recommendations approved by the Governing Body: (i) Setting up of an International Scientific Collaboration Bureau at CSIR Headquarters; (ii) a Regional Foundry Station at Agra; (iii) the Draft plan for the National Institute of Oceanography; (iv) Production of some rare biochemicals on a pilot project; (v) Organisation of refresher courses in specialised fields; and (vi) Holding of five symposia and two seminars.

International Scientific Collaboration Bureau—The Bureau will carry out assessment studies on scientific and technological developments in various countries and will initiate and establish bilateral collaboration between CSIR and parallel scientific and technological organisations abroad, especially in developing countries.

Regional Foundry Station—The Regional Foundry Station to be set up by the National Metallurgical Laboratory, Jamshedpur at Agra will be the fifth such station, the other four being at Batala (Punjab), Howrah, Madras and Bombay.

National Institute of Oceanography—This Institute will serve as a focal point for oceanic research and work in cooperation with the Indian Navy and Fisheries, Geological and Geophysics Organisation. The Institute will have a fully equipped oceanography ship to carry out the research programme. According to the draft plan prepared by the Indian National Committee on Oceanic Research the Institute is to have six main divisions, namely, Physical and Dynamical Oceanography, Chemical Oceanography with a unit for raw materials from the sea, Biological Oceanography, Oceanic Living Resources, Geological Oceanography with a unit for prospecting for oil, ore minerals and phosphates of the continental shelf and deeper areas, Data and Documentation, and Oceanographic Instrumentation

Biochemicals Production—The biochemical laboratories in India require these biochemicals which are not made in India. Many of them are imported at considerable cost while some of them cannot even be imported due to their sensitive nature. Non-availability of these biochemicals at present has affected work in the national laboratories, universities, industrial laboratories and other research organisations. A committee appointed by the Director-General of CSIR to go into the question of the manufacture of biochemicals in India has drawn up a priority list of 50 chemicals which it felt could be relatively easily made in India. The committee has suggested the location of the project at the Central Food Technological Research Institute, Mysore.

Refresher Courses—It was decided that refresher courses in specialised fields should be conducted at the national laboratories for the benefit of industry in order to fill the gap in scientific training schemes for which facilities are not available in teaching and other institutions. A recommendation to this effect had been made at the conference of the Directors of national laboratories in November 1963.

Symposia & Seminars—The holding of the following symposia/seminars during 1965 has been approved:

(i) Fertility Control (under the auspices of the Pharmaceutical & Drugs Research Committee at the Central Drug Research Institute, Lucknow), (ii) Changing, Concepts of Human Habitations (Central Building Research Institute, Roorkee), (iii) Technology of Rice and its Byproducts (Central Food Technological Research Institute, Mysore), (iv) Newer Trends in Taxonomy (under the joint auspices of the National Institute of Sciences of India and the University of Delhi), and (v) Water Pollution Control (Central Public Health Engineering Research Institute, Nagpur).

Approval has also been accorded to the holding of the sixth seminar on Electrochemistry by the Central Electrochemical Research Institute, Karaikudi and a seminar on Sea, Salt and Plant at the Central Salt & Marine Chemicals Research Institute, Bhavnagar.

The Board and Governing Body congratulated Dr B.R. Nijhawan, Director, National Metallurgical Laboratory, Jamshedpur, for the honour conferred on him by the Iron and Steel Institute of Japan in making him its honorary member and awarding him the gold medal for outstanding research and technical contributions in the field of metallurgy.

RESEARCH PROGRESS

RRL, HYDERABAD

Detection of Adulteration of Coconut Oil—A method for detection of adulteration of coconut oil with other vegetable oils by thin layer chromatography has been attempted. In this method, a 30-μg. oil sample is spotted on a silver nitrate-silica gel G plate and developed with benzene-ethanol-acetic acid (98.4 : 1.6 : 0.5) in a paper-lined chamber to a height of *c.* 10 cm.. Orthophosphoric acid is used to char the separated components. Coconut oil gives a single spot just below the solvent front whereas admixture with 5 per cent or more of other

(*Contd on p. 4, col. 1*)

BRIEFS

Electronic Instrumentation Courses

The Central Electronics Engineering Research Institute, Pilani has organised advanced courses in Electronic Instrumentation, Industrial Techniques, Audio Engineering and Acoustics, and Communication System. Shri T.N. Singh, Union Minister for Industry inaugurated these courses at Pilani on April 8, 1965. Forty scientists and engineers from industry, national laboratories, Defence and other departments have joined the training courses.

Chemical Research Committee Report 1964-65

About 225 research projects were sponsored by the committee during the year. Under these projects about 125 papers have been published in Indian and foreign journals. The following is a brief summary of the work done under these projects :

Organic Chemistry

Studies on chemistry of natural products covering both medicinal and non-medicinal plants of Indian origin have been pursued. The structures of pinastric and isopinastric acids (from lichen), latifolin (from *Dalbergia latifolia*) nudiflorine (from *Trewia nudiflora*) have been fully established. The alkaloids, alstovenine and venenatine (from *Alstonia venenata*) have been shown to be stereoisomers both having the same 9-methoxyyohimbine structure. Tentative structures of rhazidine and rhazinine have been advanced. New saponins and alkaloids, as also other interesting plant constituents, have been isolated. Many relevant intermediate compounds for synthesising steroids, tetracyclines, macrocyclic compounds and terpenoids have been prepared. Some heterocyclic compounds having boron and nitrogen as the hetero atoms have been synthesized.

Biochemistry

In the field of nucleic acids and protein biosynthesis newer types of enzymic reactions such as soluble RNA dependent non-terminal incorporation of nucleoside triphosphates into polyribonucleotide material have been studied. Triple G have been assigned as a codon for glycine and tryptophane. Fundamental studies on enzymes in plants, animal and microbial systems have been carried out especially concerning the metabolism of carbohydrate intermediates and mucopolysaccharides. Among the studies on vitamins, vitamin A epoxide has been found to possess potent biological activity *per se* and not through its conversion to vitamin A. Excess vitamin A has been shown to interfere with vitamin C metabolism. Investigations on problems of nutrition have brought out a distinction between Kwashiorkar and Marasmus—the two kinds of protein calorie undernutrition in children, on the basis of differences observed in the lipid picture in each case. For example, in Kwashiorkar fatty liver is produced and in Marasmus the liver is not fatty. Investigations on Kesari dal, an edible seed which causes the disease lathyrism, have revealed the presence of a neurotoxin (β-N-oxalyl-*L*, α, β-diaminopropionic acid) as well as additional toxic factors. In the field of antibiotics, biosynthetic studies on neomycin and streptomycin have been started. A new antifungal antibiotic highly specific against *Trychophyton rubrum* has been isolated from *Aspergillus*. In studies on jute preservation, it has been found that jute fabrics boiled in metallic salts possess remarkably high rot resistance.

Physical Chemistry

Thermodynamic studies on binary mixtures, irreversible processess and inter-molecular forces have been carried out. In Electro-chemistry, ion-solvent interactions at five temperatures have been investigated and activity coefficients evaluated therefrom. Studies in liquid crystals with thirty-three new Schiff's base compounds have been carried out and the mesomorphic transition temperatures have been attempted to be correlated with the number of carbon atoms in the alkyl chain. Photosensitized polymerization of vinyl monomers using dye-reducing agent systems has been carried out and hydrazine in combination with oxidising agents has been studied as polymerization initiator. The reactivity of benzoloxy radical towards proton abstraction from solvents and the kinetics and mechanism of proton transfer with organic acids as protonating agent have been studied.

Inorganic Chemistry

The most interesting studies in Inorganic Chemistry relate to : Synthesis of series of triphenyl germyl derivatives by the interaction of triphenyl germyl bromide and suitable silver salts ; Kinetic and thermodynamic studies of complexes in solution ; analysis of lanthanum and thorium with N-benzoylphenylhydroxylamine and development of fast methods of separation and analysis of metals based on ion exchange and solvent extraction.

Chemical Engineering & Industrial Chemistry

The investigations mainly pertained to : Fluid dynamics, Mass transfer, Thermodynamics and Kinetics. An apparatus has been set up for the study of dynamics of two-phase flow in conduits using air and water in order to understand the mechanics of two phase flow. Investigations on Micromeritics (small particles) in chemical engineering have led to rational designs of fluidized carbonizer for converting otherwise non-coking Indian coals into metallurgical grade coke, spray drier for drying of materials to obtain powders from liquids like milk, tannin extract, sulphite liquor and a number of findings which are extremely useful for the prediction and assessment of entrainment and its losses. Radial mass transfer rates from a wall of cylindrical tube filled with packings have been studied. It is very useful for the design of absorbers, extractors, etc. Temperature-entropy diagrams for *n*-butane and *iso*-butane have been prepared. A systematic study was conducted on various catalysts for the conversion of ethanol to *n*-butanol in a single step. A catalyst based on magnesium oxide co-activated with cupric oxide and manganous oxide provided a maximum yield of 41 per cent of *n*-butanol at optimum conditions of temperature and space velocity, with a feed consisting of ethyl alcohol and hydrogen in the molar ratio of 1 : 1. Investigation on two different aspects, namely ion transfer rates, and electrode losses have been carried out. Ion transfer rates in forced convection flow of electrolyte perpendicular to the electrodes and also in forced convection flow of electrolytes through fluidized solids have been studied.

Cellulose

The studies were carried out in three sections : Preparation of cellulose derivatives ; Improvement of the qualities of cellulose textile materials, and interpretation of the fine structure of cellulose in relation to its chemical modification. Work on carboxymethyl starch was completed. Two Indian patents have been obtained : Improvements relating to the processing of textiles in imparting simultaneously improved tear resistance (Indian Patent Application No : 94863) and a process for treating cellulosic textile material to impart simultaneously high dry crease recovery, high wet crease recovery and high abrasion and tear resistance. A number of acyl, alkyl and aroyl phenols were studied for their effect on cellulosic materials for resistance to micro-organisms and encouraging results have been obtained. Tamarind kernel polysaccharide was methylated and the methylglycosides were examined. The results of methylation and fragmentation analyses have been interpreted in terms of its structure.

Plastics

With the object of developing ter-polymers of styrene, acrylonitrile and butadiene studies have been conducted in emulsion polymerisation of butadiene, butadiene-styrene and butadiene-styrene-acrylonitrile. The conditions for preparing polyethylene terephthalate of required intrinsic viscosity suitable for drawing into filaments were established. The first phase of the work of standardizing the conditions for the preparation of chloro-substituted oxyethanes (suitable for molding, extrusion and coating) starting from pentaerythritol has been completed. The studies have given two different ways of characterization of vulcanisation.

Survey and Planning of Scientific Research Unit, New Delhi

Scientific Societies in India—This is a survey report, third in the series, brought out with a view to collect data on scientific societies in India and the role they have been playing in the promotion of science in the country. Information pertaining to the academic and publication activities, income and expenditure, nature of support received from State Governments, Government of India, Universities, Industries, etc. of 115 societies is included in this report. The first part of the report gives an introduction, Distribution of societies, Membership distribution, Mode of becoming member, Academic activities, General and financial support received by the societies, distribution of income and expenditure, and discussion. The second part has three appendices giving statistical tables ; Directory of Science, Engineering and Technological societies; and a Questionnaire.

Visitors

PROF. R. GORDON WASSON, Research Fellow, Botanical Museum of Harward University and Hony Research Associate, New York Botanical Gardens visited NBG, Lucknow on March 24, 1965 and delivered a lecture on "Halluimogenic Fungi of Mexico."

MRS ELLEN WATUMULL, Chairman, Distribution Committee, Watumull Foundation, Hawaii, USA visited NBG on March 31, 1965.

DR ENG. INGVAR JANELID, Professor of Mining and Mining Surveying, Royal Institute of Technology, Stockholm, Sweden visited CMRS, Dhanbad on April 23 & 24, 1965.

MR A. J. VASEY, Executive Secretary of the Commonwealth Scientific Committee visited CBRI, Roorkee on April 23, 1964.

SHRI MEHR CHAND KHANNA, Union Minister for Works & Housing visited CBRI, Roorkee on April 24, 1965.

New Publications

BASAVRAJU, B.—A study of simply supported square plates with cutouts by the Moir method and by finite differences. Technical Note No. TN-SA-5-64, NAL, Bangalore.

STEARMAN, G.H.—A digital computer design study for a transistor switching circuit. Technical Note No. TN-SE-7-64, NAL, Bangalore.

IQSY-EQUEX Programme. IQSY News Letter No. 20, Indian National Comittee for IQSY, New Delhi.

RAMANATHAN, K.R.—Report on third IQSY Assembly at Madrid. IQSY News Letter No. 21, Indian National Committee for IQSY, New Delhi.

Dr B.R. Nijhawan

DR B.R. NIJHAWAN, Director, National Metallurgical Laboratory, Jamshedpur attended the 50th Anniversary Annual Technical Meeting of the Japan Iron & Steel Institute at the invitation of the Institute. In recognition of his contributions in the field of Metallurgy and the outstanding work done by him in diverse fields of Iron & Steel Technology, Dr Nijhawan was conferred the Honorary Membership of the Iron & Steel Institute, Japan and awarded the Gold Medal for his outstanding contributions in the field of Metallurgy at the Anniversary function presided over by the Prime Minister of Japan. Dr Nijhawan is the first Indian to get this honour and so far only 20 scientists have been awarded this honour throughout the world during the last 50 years.

Dr Nijhawan also visited Japanese iron & steel plants and metallurgical research establishments in Japan to study the developments taking place in diverse fields of Iron & Steel Industry with special reference to their potential scope of application in India.

STAFF NEWS

Appointments

SHRI S. S. HASSAN, Project Engineer, NGRI, Hyderabad (March 20, 1965).

SHRI S. K. BARAT, Clerk-of-Works, RRL, Jorhat (April 4, 1965).

SHRI V. NAGARAJU, Scientist, CMERI, Durgapur (April 15, 1965).

SHRI VYANKATESH LAXMAN LOKRE, Scientist, CPHERI, Nagpur (April 19, 1965).

Resignation

SHRI S. P. ACHARYA, Scientist, NCL, Poona (March 31, 1965).

Deputation

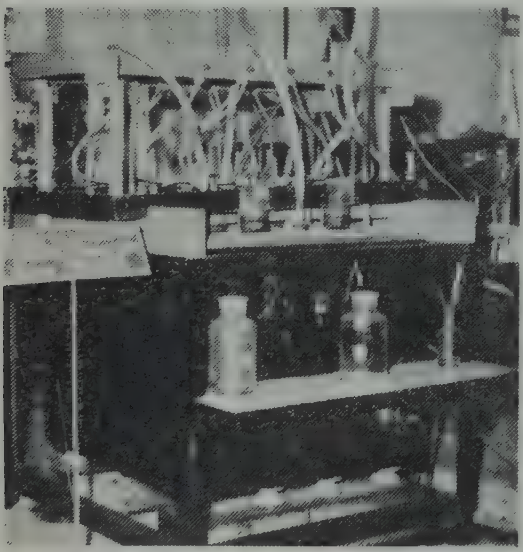
SHRI P. S. DESIKAN, Scientist, CECRI, returned and joined duty on April 26, 1965 after completing his training in the field of 'Electrothermics and Fused Salt Electrolysis' in Paris under the Indo-French Cooperation Scheme.

(*Contd from p. 1, col. 3*)

vegetable oils results in a number of spots—V.V.S. MANI & G. LAKSHMINARAYANA.

CECRI, KARAIKUDI

800-A. Cell for Production of Chlorates—As a part of the pilot plant work for the evaluation of the life of lead dioxide anodes in the production of chlorates, one cell of 800-A. capacity has been set up and is in continuous operation since Nov. 25, 1964. Graphite substrate lead dioxide anodes and stainless steel cathodes are employed. An anodic current density of 4.6-A /dm^2 is used. The temperature of electrolysis is 45°$\pm$2°C. and the *p*H of the electrolyte is maintained between 6.4 and 6.8.



CECRI, Karaikudi—Cell for production of chlorates, developed at the Institute

CLRI, MADRAS

Study of Variations in Mould Spores Sizes for Mould Resistance Test—The influence of low *p*H on the development of moulds has been studied with reference to pickling of pelts for storage. Spores of ten species of *Aspergilli*, nine species of *Penicillia* and *Paecilomyces varioti* were tried.

Of the nine species of *Pencillia*, seven were able to develop at an initial *p*H of 2.0. and in general, the *Pencillia* studied were able to grow better at low *p*H levels compared to the *Aspergilli*. This indicates that those species, the spores of which are not destroyed at a *p*H of 2.0, but remain viable are likely to be a source of danger in pickled pelts in view of the fact that their *p*H range for development commenced from 3.0. Even properly pickled pelts show a rise in their *p*H value on storage, due to breakdown of hide protein following acid hydrolysis. Pickling with sulphuric acid and sodium chloride alone may not, therefore, be a sufficient safeguard for preservation. A comparative study of spore swelling and percentage germination of spores was also carried out. These methods showed more or less identical results, as regards efficacy of fungicide treatments of pickled pelts. The test was standardised with regard to concentration of spores in the suspension using *Aspergillus niger*, *A. flavus*, *Paecilomyces varioti* and *Penicillium purpurrescens*.

PATENTS

Filed

98141 : *Some new vapour phase inhibitors of corrosion for mild steel, copper, brass and aluminium*—V. S. Agarwala & K. C. Tripathi, Banaras Hindu University, Varanasi.

98142 : *Archo-Solslider*—K. L. Datta & B.B. Garg, CBRI, Roorkee.

98143 : *A device for the measurement of displacement between two points*—Bhagwant Singh, CMRS, Dhanbad.

98145 : *Improved type convergence recorder*—Bhagwant Singh & K. N. Sinha, CMRS, Dhanbad.

98146 : *Development of a process for the manufacture of food beverages*—T. K. Ananthachar, B. H. S. Rau & R. A. Rajagopalan, CFTRI, Mysore.

98147 : *Development of a process for the manufacture of beverages from oilseed proteins*—B. H. S. Rau, T. K. Ananthachar & R. A. Rajagopalan, CFTRI, Mysore.

98148 : *Improvements in or relating to the sharpening of razor blades*—M. A. V. Devanathan, V. K. Venkatesan & S. Sarangapani, CECRI, Karaikudi.

98149 : *A portable instrument for the measurement of soil moisture at various depths* — Salaruddin, & B. V. Khasbardar, Meteorological Office, Poona.

98150 : *A process for synthetic fibre from neem cake*—B. D. Agrawal & Bhola Nath, H. B. T. I., Kanpur.

98151 : *Improved latch arrangement*—S. N. Bhagi, CMERI, Durgapur.

98152 : *A new composition of dye-penetrants containing indigenous materials for surface and sub-surface crack detection*—S. G. Nanjunda Swamy, CMERI, Durgapur.

98154 : *Load cell incorporating optical device*—B. Singh & R. K. Prasad, CMRS, Dhanbad.

98157 : *Improvements in or relating to a matrix electrode for use in alkaline cells*—M. A. V. Devanathan, N. Ramaswamy & S. Venkatesan, CECRI, Karaikudi.

98432 : *A process for the treatment of ceramic bodies to make them machinable*—Shiv Saran, S. Rangaranjan & T. V. Ramamurti, NPL, New Delhi.

98590 : *Thermometer time lag testing machine*—T. D. Bansal, NPL, New Delhi.

98591 : *Improvements in thermometer cage*—T. D. Bansal, NPL, New Delhi.

West Germany

C. 34,782 VI b/15 1 : *Preparation of polyurethane printing rollers*—N. D. Ghatge & S. L. Kapur, NCL, Poona,

C 35242 VI b/48c : *Anodic phosphating*—K. S. Rajagopalan & B. Dandapani, CECRI, Karaikudi.

U.K.

14553/65 : *Improvements in or relating to the processing of textiles for imparting simultaneously improved tear resistance and abrasion resistance*—V. B. Chipalkatti, R. M. Desai, N. B. Sattur & I. Hussain, SRIFIR, Delhi.

Accepted

87816 : *A device for constant current supply in electrophoresis*—A. Kumar, P. D. Bhatnagar & A. K. Bhattacharya, Agra College, Agra.

88019 : *A yarn tension measuring and recording instrument*—A. Pande, S. R. Ranganathan & G. S. Ganesan, SRIFIR, Delhi.

89004 : *A polycrystalline P-N junction photovoltaic solar cell*—A. U. Momin & A. P. B. Sinha, NCL, Poona.

U.K.

989802 : *Improvements in or relating to the modification of aluminium alloys containing silicon*—S. S. Bhatnagar, P. K. Gupte, B. R. Nijhawan & G. S. Nair, NML, Jamshedpur.

Sealed in France

139078 : *Processing of dry ready-to-wet sausage casings from cattle, goat, sheep, pig and other mammalian intestines*—S. K. Barat, CLRI, Madras.

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CSIR NEWS

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Summer School

The Central Mining Research Station, Dhanbad is organising a Summer School on 'Aid to Production' during June 16-25, 1965 as a measure of collaboration between the National Laboratories, Universities and the Industry. Persons desirous of participating in the Summer School may contact the Director of the Station.

FAO Training Centre

The FAO International Food Technology Training Centre was formally inaugurated by Shri V.V. Giri, Governor of Mysore at the Central Food Technological Research Institute, Mysore on April 20, 1965. Representatives from the Food and Agriculture Organisation of the United Nations, Canada and different countries of Asia and Far East attended the function.

The centre, established by the FAO with the collaborative efforts of the Canadian Freedom From Hunger Committee and the Government of India, will train selected participants from industry and government departments in up-to-date methods and procedure of food processing, preservation, storage, packaging and distribution in order to increase the quantity as well as improve the quality of indigenous food in the various countries of Asia and Far East.

Training Course

A three-week training course on Quality Control of Salt was organised by CSMCRI, Bhavnagar during April 5-24, 1965. The course, second in the series, was attended by five trainees from various salt works. During the course, lectures were given on different aspects of salt technology besides the laboratory work including analysis of samples of brine, salt, bittern and mixed salts and practical training at local salt works.

RESEARCH PROGRESS

National Laboratories

NML, JAMSHEDPUR

Recovery of Tin from Tinplate Scraps—As there are no deposits of tin ore in India, the recovery of tin from all possible wastages has become very important. In view of this, investigations have been conducted for recovery of metallic tin by electrolytic detinning from tinplate scraps. The electrolysis was carried out with a caustic soda bath using stainless steel sheets as cathode and the tinplate scrap, packed in the form of rectangular bundles, as anode.

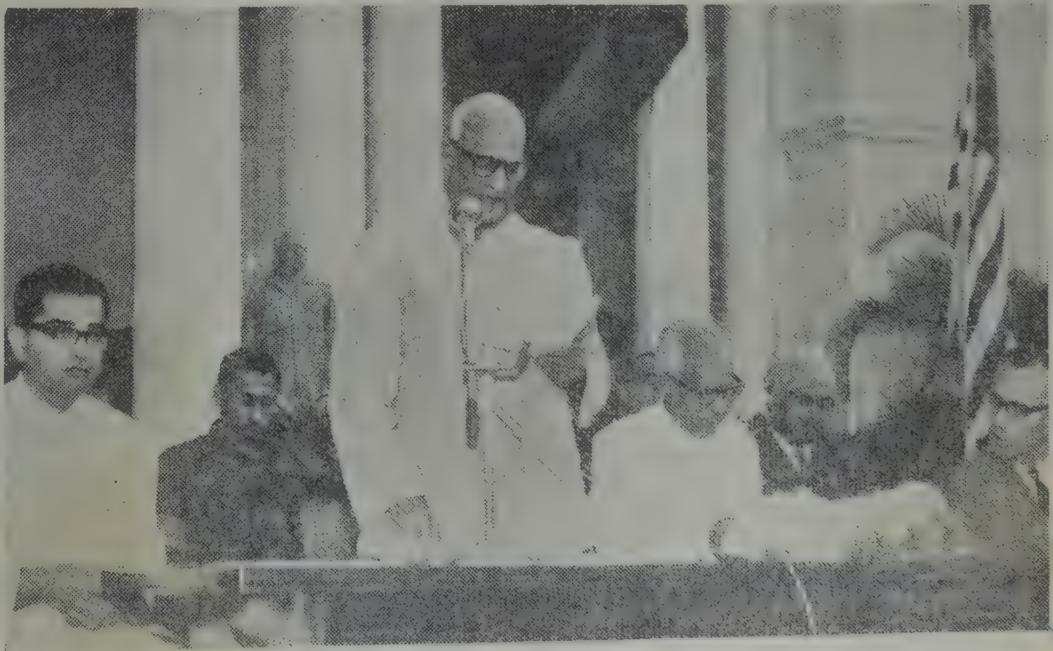
Studies were made to determine the optimum conditions of concentrations of caustic soda, sodium acetate, sodium stannate and sodium carbonate in the electrolyte, temperature of bath, current density, amount of scrap to be charged, time of detinning and relevant factors such as the dissolution and deposition of tin by electrolysis. It has been found that sodium stannate and sodium carbonate progressively build up in the alkline electrolyte (the later due to absorption of atmospheric carbon dioxide) and there is a fall in cathode C.E. Treatment with lime to remove carbonate restores the high value of cathode C.E. even though stannate content remains high.

Recovery of metallic tin as cathode deposits (purity of 99.8 per cent) has been found to be up to 96 per cent under a current density of about 13.5 A./sq. ft and a current efficiency of 70.8 per cent. Maximum percentage of tin left in the detinned scrap was 2.5 per cent of the total amount of tin in the coating.

CSMCRI, BHAVNAGAR

Recovery of Epsom Salt from Sels Mixts—'Sels Mixts' containing magnesium sulphate and sodium chloride is obtained as a by-product in the manufacture of potassium chloride from mixed salt by hot extraction process. The recovery of epsom salt from the Sels Mixts was not satisfactory by hot digestion and

(Contd on p. 4, col. 1)



CFTRI, Mysore—Shri V.V. Giri, Governor of Mysore inaugurating the FAO International Food Technology Training Centre on April 20, 1965. Seated from left to right on the dais are : Dr H.A.B. Parpia, Shri K.L. Srimali and Dr W.J. Gall.

BRIEFS

CMRS, Dhanbad

Facility for Testing Permitted Class of Explosives—Production of permitted class of explosives could not be undertaken in the country due to non-existence of facilities for testing. The Station has now successfully established the facility for testing these permitted class of explosives and has made it possible for such explosives to be manufactured in the country for the first time. A demonstration of the testing facility was held at the Station on May 5, 1965.

The explosives of this class, for which a demand to the extent of Rs 1 crore per year exists, were not hitherto manufactured in the country for want of indigenous testing arrangements regarding their suitability for safe use in mines. With the commissioning of the facility at Dhanbad, which has been created at a cost of about 2 lakhs of rupees, indigenous development and manufacture of the permitted class of explosives is expected to be established and grown.

The set-up consists essentially of a steel gallery, 5 foot in diameter, 50 feet long, with the explosion chamber being formed by the closed end of the gallery and a paper pressure-relief diaphragm placed about 18 feet away from it and a cannon having a bore of approximately 2¼ inches to a depth of nearly 48 inches. The test is carried out by filling the explosion chamber with a 9.0 per cent methane-air mixture and firing varying quantities of the explosive undergoing examination from the cannon into the gas. Tests are also carried out by firing the explosive charge into a pre-formed cloud of coal dust of specified fineness and chemical characteristics. Ignition of the gas or the coal dust beyond the number permitted with respect to the class of explosive is deemed to disqualify the explosive.

Orientation Course in Food Technology

The Central Food Technological Research Institute, Mysore organised an Orientation Course in Food Technology, during April 15-24, 1965. The course was attended by the nominees from the Government of India, representatives from the Indian food industries and the senior officials of the countries of Asia and Far East. The training facilities available at the Institute and types of courses to be given by this centre were discussed.

Survey & Planning of Scientific Research Unit Report

A Report of Research on Research done by the Survey & Planning of Scientific Research Unit of CSIR for the period March, 1963-December, 1964 has been published. It is divided into two parts. The first part deals with the programme of research and the second with some of the activities of the Unit. The research report is presented projectwise with the name of the leader of the project and other members of the team. In all, 26 projects have been dealt with. In the end, the activities by way of participation in various scientific conferences and the organisation of seminars, lectures and other such activities have been included.

Research Grant to CDRI

United States Department of Agriculture has offered a grant, amounting to Rs 313,290 to CDRI, Lucknow, under United States Public Law No. 480 for a research project entitled "Investigation of the distribution of aerobic actinomycetes in India, with particular emphasis on their isolation, characterization, antibiotic production and preservation, for placement in the Culture Collection of the Agricultural Research Service as potential agents for the conversion of farm produced raw materials to products useful to industry and the consuming public" for a period up to 5 years.

Visitors

Mr Richardson, Mr Rain Water & Dr S. C. Gupta from Department of Agriculture, U. S. Embassy in India visited NCL, Poona on April 22, 1965.

Dr Irwin E. Vas, Research Engineer and Lecturer, Princeton University, U. S. A. visited NAL, Bangalore on April 22 & 23, 1965 and gave a talk on 'Hypersonics research facilities at the Princeton University'.

Mr A. J. Vasey, Executive Secretary of the Commonwealth Scientific Committee, U. K. visited NAL Bangalore on April 30, 1965.

Mr M. F. Stanmore, U. N. Expert of the National Council of Applied Economic Research (India), visited CFRI, Jealgora on April 30, 1965 and discussed the industrial development plan for the State of Bihar.

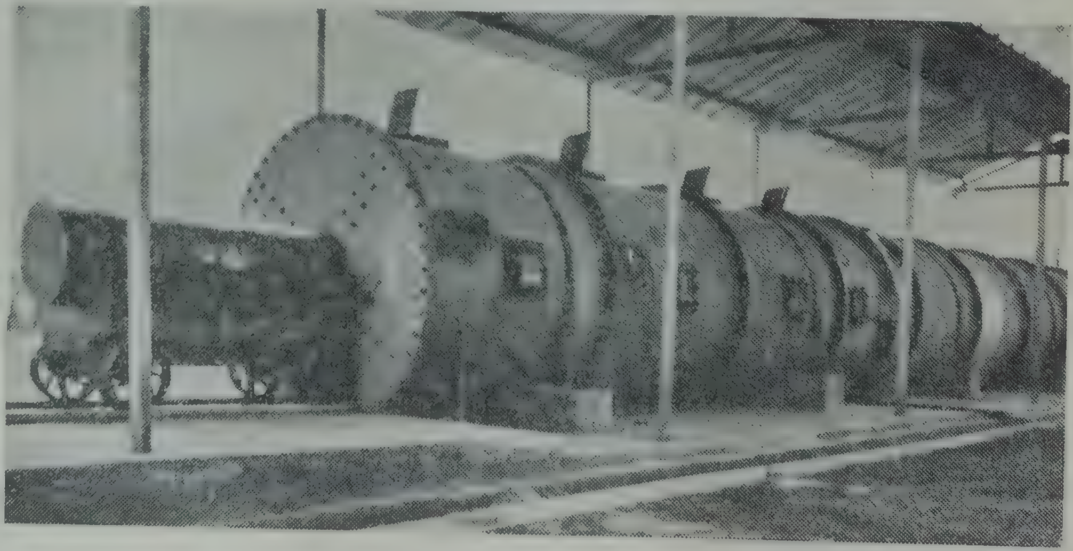
Dr A.J. Sharp, Professor of Botany, University of Tennessee, Tennessee, U.S.A., and the President of the Botanical Society of America; and Dr Z. Iwatsuk, Curator, the Hattori Botanical Laboratory, Miyazaki-Ken, Japan, visited the National Botanic Gardens, Lucknow on May 4, 1965. Dr Sharp delivered an illustrated lecture on the 'Phytogeographic relationship between South-East Asia and North America'.

STAFF NEWS

Appointments

Shri B. M. Agarwal, Scientist, CGCRI, Calcutta (March 12, 1965).

Dr J. K. Sinha, Scientist, CMRS, Dhanbad (March 30, 1965).



CMRS, Dhanbad—Statutory testing gallery for permitted explosives. The cannon with explosive charge is in position for firing.

SHRI K. S. PARAMESH, Engineer Officer, NAL, Bangalore (April 5, 1965).

SHRI B. K. DE SARKAR, Scientist, CGCRI, Calcutta (April 7, 1965).

SHRI R. C. TRIVEDI, Scientist, CPHERI, Nagpur (May 3, 1965).

SARVASHRI V.N. CHHIBBER, J. DAKSHINAMURTI & P.S. SHANKAR, Scientists, PID, New Delhi (May 24, 1965).

Transfer

DR J. PRASAD, Scientist, CGCRI, Calcutta has been transferred to CSIO, Chandigarh (April 5, 1965).

Nominations

DR K.N. SINHA, Director, CMRS, Dhanbad—Co-opted Member, Sub-Committee on Timber, Member, Coal Board, Ministry of Steel & Mines, New Delhi.

PROF. K.N. KAUL, Director, NBG, Lucknow—Member, Committee appointed by the U.P. State Government to examine the question of preservation of open spaces and public parks in urban areas in U.P.

DR P.S. GILL, Director, CSIO, Chandigarh—Chairman, Panel for Instruments of the Ministry of Industry and Supply.

DR K.S.G. DOSS, Director, CECRI, Karaikudi—Member, Committee to review the Curriculum and Syllabii for the M.Sc. degree course in Chemistry Branch of IIT, Madras.

SHRI M. M. SURI, Director, CMERI, Durgapur—Member, Technical Committee on Heavy Engineering Capacity of the Planning Commission.

SHRI S. G. N. SWAMY, Scientist, CMERI, Durgapur—Member, Reviewing Committee of the Planning & Development Division of the Fertilizer Corporation of India Ltd, Sindhri.

DR AMALENDU ROY, Scientist, NGRI, Hyderabad—Member, Board of Editors for the International Geophysical Research Journal 'Geo-Exploration' published from Scandinavia.

DR R.D. SRIVASTAVA, Scientist, CBRI, Roorkee—Member, Committee for standardised norms of equipment from primary and middle schools, State Institute of Education, Punjab.

DR S.K. CHOPRA, Scientist, CBRI, Roorkee—Member of the reconstituted panel on Cement industry, Ministry of Industry and Supply, Government of India.

DR S.L. KAPUR, Scientist, NCL, Poona—Member, Research and Extra Service Committee of Rubber Board of India.

ISI Nominations

DR S.S. BHATNAGAR, Scientist, NML, Jamshedpur—Member, Bearing Components Sub-Committee of the Alloy & Special Steel Sectional Committee.

DR J. PRASAD, Scientist, CSIO, Chandigarh—Representative, Organisation on the Composition of Medical Optical Instruments Sub-Committee.

DR B. SINGH, Scientist, CMRS, Dhanbad—Technical Representative, Mine Tubs and Mine Cars Sub-Committee.

DRS E.R. SAXENA & Y. VENKATESHAN, Scientists, RRL, Hyderabad—Principal representative and vice representative respectively, Bleaching Earths Sub-Committee & Panel for Methods of Test for Bleaching Earths.

DR ATMA RAM, Director, CGCRI, Calcutta — Member, Committee under Section (1) of the ISI Act, 1959 to settle the programme of work to be done by the Indian Statistical Institute during 1965-66.

Deputations

SHRI M. M. SURI, Director, CMERI, Durgapur left for Moscow on May 8, 1965 to join the delegation of Government of India for discussions with Soviet authorities on matters relating to India's development plans, especially the Fourth Plan.

SARVASHRI P. K. SOM & K. P. MUKHERJEE, Scientists, NML, Jamshedpur left for Japan on April 14, 1965 for 6 months' training in Metallurgy under the Colombo Plan.

SHRI R. SANKAR, Scientist, NAL, Bangalore, left for U. K. on April 19, 1965 for 6 months' training in Fast Data Processing Systems and Computation, at the Oxford University and the National Physical Laboratory, Teddington under the Colombo Plan.

DR N. R. SUBRAMANIAN, Scientist, NAL, Bangalore returned from Paris on May 3, 1965 after completion of specialised training in Fluid Mechanics and Hypersonics for a period of 8 months under a French Government scholarship.

Honours & Awards

DR V. N. SHARMA, Scientist, NBG, Lucknow has been appointed guide for the Ph.D. degree of the universities of Aligarh and Lucknow.

PROF K.S. G. DOSS, Director, CECRI, Karaikudi has been elected Honorary Vice-President of the Third International Congress on Metallic Corrosion to be held in Moscow during May 16-25, 1966.

SHRI K.D. PAVATE, Scientist, CEERI, Pilani has been awarded the Associate Membership of the Institution of Electrical Engineers, London.

MISS MITHILESH SHARMA, Junior Scientific Assistant, NBG, Lucknow—Ph.D. (Agra); thesis: *Contribution to the palynology of Indian monocotyledons.*

SHRI P. SUDERSHAN, Senior Scientific Assistant, RRL, Hyderabad—Ph.D. (Osmania); thesis : *Studies on joint action of insecticides and synergists on cockroach heart.*

Research Papers

DEV, A.V., KULKARNI, S.B., GHARPUREY, M.K. & BISWAS, A.B. (NCL, Poona)—Equilibrium film pressure of the monolayers on water of *n*-long-chain alcohols and *n*-long-chain alkoxy-ethanols. *J. Colloid Sci.*, **19** (1964), 813.

DEV, A.V., KULKARNI, S.B., GHARPUREY, M.K. & BISWAS, A.B. (NCL, Poona)—On the rate of spreading of long chain *n*-alcohols and *n*-alkoxy ethanols from solid into monolayers on water. *J. Colloid Sci.*, **19** (1964), 820.

RAO, P.S. (NCL, Poona)—The influence of *p*H on mercuric chloride reduction under ionizing radiations. *Bull. chem. Soc. Japan*, **38** (1) (1965), 137.

PRADHAN, S.N. PANDEY, K. & BADOLA, R.P. (CDRI, Lucknow)—A clinical trial of hayatin methiodide as a relaxant in 100 cases. *Brit. J. Anaesth.*, **36** (10) (1964), 604.

KAMBOJ, V.P. & KAR, AMIYA B. (CDRI, Lucknow)—Effect of iron salts on the genital organs and fertility of male rats. *Acta biol. med. german.*, **13** (1964), 928.

CHANDRA, S.V. & ZAIDI S.H. (CDRI, Lucknow)—Experimental myocardial infarction—The effect of monoamine-oxidase inhibitors on coronary thrombosis. *J. Atheroscler. Res.*, **5** (1965), 249.

Research Progress

(*Contd from p. 1, col. 3*)

crystallisation due to the presence of sodium chloride in excess. Hence, efforts were made to recover epsom salt from the Sels Mixts by physical method of separation. It was observed that in the hot extraction process, magnesium sulphate was converted to kieserite form due to change of phase from $MgSO_4.7H_2O$ to $MgSO_4.H_2O$ and disintegrated into fine particles while the sodium chloride remained as such without change in the particle size. Sieve analysis of Sels Mixts fraction showed that 88-95 per cent of the kieserite particles passed through — 150 B. S. S., whereas sodium chloride remained as coarse fraction. Further, settling rate of Sels Mixts in 36°Be bittern either in cold or hot showed that the kieserite fine particles remained in suspension whereas sodium chloride settled quickly. Based on the above data, the kieserite fraction was separated by the physical method by settling the slurry of Sels Mixts in 36° Be bittern in hot or cold for five minutes and filtering the suspended liquor.

Epsom salt was recovered from the kieserite fraction by crystallising at 60°C. The overall recovery of magnesium sulphate in the form of epsom salt was 40 per cent from Sels Mixts with 99 per cent purity —K.V. Lad, J.R. Sanghavi, G.D. Bhat & K. Seshadri.

CGCRI, CALCUTTA

Sintering of Technical Titanium Dioxide in Presence of Minor Additives—The sintering characteristics of technical titania between 1100°C. and 1400°C. without and with 2 and 4 mol. per cent additives were investigated by measuring the shrinkage, micro-structure and grain growth of sintered products. It was observed that addition of Li_2O, MgO, NiO, CoO and ZnO aided sintering; BaO, SrO and CaO aided sintering only at about 1400°C. and Al_2O_3, Fe_2O_3 and PbO only above 1300°C. Microstructure developed on heating at 1400°C. for 24 hr showed that with the addition of Li_2O, grain growth was maximum in comparison with others and it was accompanied by twinning and herringbone domains. Domain features were also observed with samples doped with CoO and CaO. Titania with no dopant showed small grain size with dense structure when heated to 1400°C.

Sponsored Research

Petrochemistry of Chhindwara Granites—Studies on twelve rocks comprising six pink granites, one grey granite, one prophyritic granite, one aplite, one hornblende Schist, one amphibolite calc-silicate granulite, have revealed that the pink granites of this area are calc-alkline granite of magmatic origin and they in turn have brought about the granitization, migmatization and hybridization of the country rocks to form porphyroblastic granite and gneiss, migmatites, lit par lit gneisses, streaky gneisses and certain rocks of dioritic nature. From the analyses of these rocks it was inferred that the porphyroblastic granite and gneiss are formed due to granitization of hornblendic rocks of the area. The grey granite falls in the field of sillimanite microcline granite and gneiss and is therefore inferred to be metamorphic; aplite also falls in the above field but it may be a late stage hydrothermal phase of the pink granites enriched with potash and silica.

Variation diagrams after Holmes (1921) were drawn and it was observed that as SiO_2 increases, Al_2O_3, Fe_2O_3, FeO, MgO and CaO decrease, and potash and soda show reciprocal relations. From these features of differentiation, it is inferred that granitic rocks around Chhindwara are highly siliceous.

PATENTS

Filed

98144 : *Suspension type convergence indicator*—Bhagwant Singh, CMRS, Dhanbad.

98155 : *An improved method for the hydration of sulphonation mixtures of copolymer beads*—S. L. Kapur & K. Ramakrishan, NCL, Poona.

98156 : *Preparation of solvent modified copolymers by suspension polymerisation of vinyl monomers*—S. L. Kapur & K. Ramakrishnan, NCL, Poona.

98159 : *Improvements in or relating to the preparation of lead-acid battery plates*—H. V. Udupa, S. Sampath, Ramesh Chandra, S. Palanichamy & C. J. Johny, CECRI, Karaikudi.

98206 : *Improvements in or relating to the corrosion inhibition of aluminium*—M. A. V. Devanathan, B. A. Shenoi, P. L. Joseph & V. Balasubramanian, CECRI, Karaikudi.

99033 : *Improvements in or relating to anode mounting for high performance cells*—M. A. V. Devanathan, N. Ramaswamy & S. Venkatesan, CECRI, Karaikudi.

99181 : *Improvements in or relating to the electrolytic reduction of nitroguanidine to aminoguanidine*—H. V. Udupa, G. S. Subramanian & K. S. Udupa, CECRI, Karaikudi.

U K.

16927 : *Preparation of porous carbon electrode using vegetable carbon for use in air depolarized cells*—A. K. Abdul Waheed, K. V. N. Rao & K. S. G. Doss, CECRI, Karaikudi.

NOTIFICATION

It is proposed to appoint a Scientist in the scale of Rs. 1600-100-1900 for the National Physical Laboratory, New Delhi. The incumbent is to be a scientist of high calibre in physical sciences and : (a) should have done applied research on physical aspects with a view to help industries; and/or (b) should have done basic research in fields which have a bearing on problems of a physical nature associated with applied research; and/or (c) should have experience in maintenance of basic standards of mass, length, time and temperature as well as derived standards for Electricity and Photometry.

There is no standard form of application. Those who wish to be considered are invited to send a statement to the Director-General, Scientific and Industrial Research. Others who may wish to send nominations for this post may kindly forward their proposals to the Director-General.

All communications will be treated as confidential. Statements and proposals should be received by the Director-General on or before July, 1, 1965 at the office of the Council of Scientific & Industrial Research, Rafi Marg, New Delhi-1.

Any further information in this connection may be obtained confidentially from Secretary, Council of Scientific and Industrial Research, Rafi Marg, New Delhi-1.

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CSIR NEWS

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Directors' Conference

The 15th Conference of the Directors and Heads of National Laboratories/Institutes of CSIR will be held at Srinagar during Oct. 14-15, 1965. Shri M.C. Chagla, Union Education Minister and Vice-President, CSIR, will preside over the Conference. On this occasion, he will also perform the opening ceremony of the Srinagar Branch of Regional Research Laboratory, Jammu.

SITRA Conference

The Seventh Conference on 'Human Relations in Industry' is being organised by South India Textile Research Association (SITRA) at Coimbatore during July 27-28, 1965 with the objective of developing interest in the study of particular problems of human relations from the point of view of management, labour and the community, and promoting better human relations in the industry. Shri D. Sanjivayya, the Union Minister of Labour and Employment will inaugurate the conference on July 27, 1965 at 10.30 A.M.

There will be three sessions in addition to the inaugural function. The subjects to be covered are: Manpower Planning; Techniques of Selection; Performance Appraisal; Problems of Expansion; The Older Worker in Industry; and Employees Co-operative Stores.

Information and Liaison Cell for Small Industries

An Information and Liaison Cell for small scale industries has been set up by the Council as a part of the Research Coordination, Industrial Liaison and Extension Unit at CSIR Headquarters, New Delhi. The Cell will provide technical guidance and help to small industries and organise the follow-up of schemes taken up by the laboratories on behalf of small scale industry.

RESEARCH PROGRESS

National Laboratories

NPL, NEW DELHI

Broad-Band Ferrite Resonance Isolators—Techniques for extending the use of ferrite resonance isolators over broad bands at microwave frequencies have been developed at the laboratory. As a result, a resonance isolator which could cover the entire X-band (8.2-12.4 kMc/s.) and conforming to the following specifications, has been fabricated: Frequency band for isolation, 2 db.; maximum isolation, 40 db.; Maximum forward attenuation, 1.8 db.; and Maximum input VSWR, 1.1. Permanent magnets to be used with this isolator are being developed.

CFRI, JEALGORA

Investigations on Talcher Coals—Large scale washing tests were conducted on samples of coals from Deulbera Colliery and South Balanda Colliery (about 1000 tons each) in the pilot plant washery to assess the suitability of these coals for preparing devolatilised char, to be subsequently used in the low shaft furnaces at Barbil in Orissa. The tests revealed that 83 to 91 per cent of clean coal with ash content varying between 11.7 to 12.2 per cent could be obtained.

The raw steam coal from the Deulbera and South Balanda Collieries when subjected to washing tests in laboratory yielded about 90 to 95 per cent of clean coal with 12 per cent ash content.

NML, JAMSHEDPUR

Curie Temperature of Iron Alloys—Electronic structure of transitional elements, like iron, was investigated by studying the change of ferromagnetic properties when alloyed with non-magnetic metals like copper, zinc, aluminium etc. by measuring the Curie temperature employing the induction method. The variation of Curie Temperature with composition suggested that a process of electron absorption by iron at lower percentages of solute followed by dilution of iron, before ordering sets in. The electron absorption by iron is suggested to be due to the filling up of the holes in 3d band in excess of the 2.22 holes responsible for ferro-magnetism to be shown. The process of filling up of excess holes is at a rate proportional to the valency electrons contributed by solute. Addition of more solute, once these excess holes are filled up, reduces Curie temperature at a rate suggesting dilution of iron by the solute. The number of holes in 3d state is concluded to be 2.58 and the value of the excess holes is 0.36 per atom of iron.

Beneficiation and Sintering of Mixed Iron Ore Samples from Kondekasa Block of Dalli Pahar Deposits—Pilot plant studies on the beneficiation of mixed iron ore samples from Dalli mines, sent by Bhilai Steel Plant, have shown that the problem of handling sticky and wet ores, under Indian monsoon conditions can be successfully overcome by washing the ore, thereby yielding enriched sized ore as well as upgraded fines for production of self-fluxing and super-basic fluxed sinters suitable for iron smelting. By employing optimum jigging of the washed ore fines, silica and alumina contents thereof could be further appreciably lowered. Sintering studies of the beneficiated ore fines have established that good quality sinters having basicity ratios $(CaO\ MgO/SiO_2\ Al_2O_3)$ upto 2.4, could readily be produced with improved economic iron productivity.

CGCRI, CALCUTTA

High Pressure Autoclave—Stainless steel autoclaves to withstand

(Contd on p. 4, col. 1)

BRIEFS

Structural Engineering Research Centre, Roorkee

The Structural Engineering Research Centre, Roorkee has been established as a separate institute with effect from June 10, 1965, with Prof. G.S. Ramaswamy as Scientist-in-charge. The existing scientific & technical staff attached to the Structures Division as well as the Computer Centre of CBRI will constitute the staff of the new centre.

CMRS Summer School

A ten-day Summer School on 'Aid to Production' was organised by the Central Mining Research Station, Dhanbad during June 16-25, 1965. The school was attended by the leading mining engineers from industry, Government departments, and educational and research institutions. In all, 22 papers were read and discussed. The subjects covered included practical hints for reconstruction of existing collieries, extent of mechanisation that is conductive for increasing productivity, developments required in regard to training of personnel at various levels and the need for evolving a more rational national mineral policy besides the role of research on mine working, rock mechanics, surveying, developments in blasting technology, health problems associated with mining personnel and environments, a new conception of winding shaft and operational and technical aids for aiding mine production and improving productivity of miners.

CBRI, Roorkee

A four-day forum on 'Brick and Tile Manufacture' was held at the Institute during July 1-4, 1965 in four technical sessions viz., (i) soils and soil composition ; (ii) kiln efficiency and burning of bricks ; (iii) mechanisation of brick industry; and (iv) modular coordination and bricks. The forum was inaugurated by Maj. General Harkirat Singh, Advisor, Planning Commission, under the Chairmanship of Lt. General H. Williams, Consultant, Planning Commission, Government of India. About forty delegates of the All India Brick and Tile Manufacturers' Federation participated in the forum and also visited CBRI Kiln and other kilns at Hardwar, Rishikesh and Jawalapur where various experiments on the improvement of brick kilns were carried out.

NCL, Poona

Investigations were completed on pilot plant scale to develop an industrially feasible process for the optimum recovery of semi-refined morphine and other major alkaloids (narcotine, codeine and thebaine) from opium. The process was successfully demonstrated to the representatives of the Ministry of Finance. Based on the new process, the Ministry has decided to start a factory at Neemuch, M.P.

Advances in Palynology

The National Botanic Gardens, Lucknow have brought out a publication entitled 'Advances in Palynology'. This publication (pp. vi+438) is a collection of 18 articles, contributed by Indian Scientists and covers a wide field. Almost all the articles have been nicely supplemented with illustrations and tables and in some cases concluding remarks are also given on the information reviewed. The publication as such presents a comprehensive picture of palynological sciences and projects its vast scope and potentialities.

CFTRI Annual Report, 1962-63

The Annual Report of the Central Food Technological Research Institute, Mysore for the year 1962-63 has been published. Beginning with an introduction highlighting the activities of the institute, the report (pp. ix+167) summarises the progress of research work carried out at the Institute under the following heads: Storage and preservation of perishables ; infestation control and pesticides ; biochemistry and nutrition, dietetics ; food processing; food technology ; arecanut technology ; meat and fish technology ; and sanitation ; food engineering, and packaging and containers. The work done at the regional research stations at Bombay, Nagpur, Trichur and Lucknow has also been included. There is a chapter on information, statistics and extension services which deals with operational research, statistical investigation. extension work, technical aid to industry and public, industrial liaison work, short courses, demonstration lectures, exhibitions, training and assistance, participation in symposia, seminars and conferences, publications and other activities of the Institute. Lists of research papers published, patents, memberships of committees, and staff have been included at the end.

CGCRI's Technical Circular

For the benefit of glass, pottery, refractories and enamel industries, the Central Glass & Ceramic Research Institute, Calcutta has started bringing out Technical Circulars, publishing reviews on important topics prepared by its research workers. Industrial concerns and technical personnel, in the fields of glass, ceramics, refractories and enamels, desirous of obtaining copies of the circulars may request the institute to put them on the mailing list.

The first number of the Technical Circular brought out recently is devoted to 'Sintered Alumina' describing in some details the mechanism of sintering of alumina, the factors affecting the sintering process, namely, grain size of the starting alumina, temperature and mineralizer addition and the preparation methods, properties and uses of sintered alumina.

New Publications

The South India Textile Research Association (SITRA), Coimbatore has brought out the following two publications : (i) Bibliography on Irregularity (1920—1963)—E. Stephanos ; and (ii) Types of Servicing Spindles in Ring Spinning and its Effect on Waste Per Cent and Work Load—S. Seshadri.

Visitors

Mr K. Russam of the Material and Construction Division, Road Research Laboratory Harmodsworth (U.K.) visited CRRI, New Delhi on June 19 & 21, 1965, and CBRI, Roorkee on June 22,1965.

Mr Earl Campbell, Highway Engineer, Highway Research Board, U.S.A., visited CRRI, New Delhi on July 3, 1965.

STAFF NEWS

Appointments

Dr P. K. Grover & Shri V. P. Kamboj, Scientists, CDRI, Lucknow (June 17, 1965).

Sarvashri P. C. Kapur & Narendra Kumar Aggarwal, Pool Officers, NPL, New Delhi (April 30, 1965 and May 1, 1965 respectively).

Dr K. S. Narasimhan, (March 25, 1965); Shri S.A. Quader (April 23, 1965); Dr Shib Narayan Mahapatra, (June 9, 1965); & Dr B.R. Sant, (June 15, 1965), Scientists, RRL, Bhubaneswar.

Resignation

Dr B. C. Kundu, Scientist, CDRI, Lucknow (July 15, 1965).

Nominations

Shri M. Kurien, Scientist, IIP, Dehra Dun—Member, Committee on Petroleum Technology for Levy of Excise Duty on Mineral Oils, Ministry of Finance, New Delhi.

Dr H.A.B. Parpia, Director, CFTRI, Mysore & Dr J. C. Shri Vastava, Scientist, CSIR, New Delhi—Members, Committee to coordinate the work of Rat Eradication Control Programme, Planning Commission, New Delhi.

Dr K. T. Achaya, Scientist, RRL, Hyderabad—Member, Joint Committee of Indian Central Oilseeds Committee & CSIR.

Dr Nitya Nand, Scientist, CDRI, Lucknow—Member, Committee for the examination of the reasonableness of the cost of Anti-T.B. Drugs and to explore ways and means of stepping-up their production in bulk as well as in formulation forms, Ministry of Health, New Delhi.

Dr Atma Ram, Director, CGCRI, Calcutta—Member, Committee under Section (1) of the ISI Act, 1959 to settle the programme of work to be done by the Indian Statistical Institute, Calcutta during 1965-66

ISI Nominations

Dr S. S. Bhatnagar, Scientist, NML, Jamshedpur—Convener, Recommended Practice for Heat Treatment of Steel Sub-Committee.

Shri M. J. Sahani, Scientist, NML, Jamshedpur — Member, Automotive Vehicles Sectional Committee.

Shri R. D. Gupta, Scientist, NML, Jamshedpur — Member, Orthopaedic Instruments and Accessories Sub-Committee.

Deputations

Dr H.S. Rao, Scientist, CFRI, Jealgora represented Dr A. Lahiri, Director at the Sixth International Conference in Coal Science, held at Munster, Westphalia, West Germany during June 1-3, 1965 and presented a paper on "A Mass Spectrometric Determination of the Relative Abundances of Carbon Isotopes in Fossil Fuels and Their Significance in Relation to Structure and Metamorphism" (in co-authorship with D.K. Sen & A. Lahiri) and another on Effect of Hydroxyl Groups on the properties and Behaviour of Coal' (by P.N. Mukherjee, L.V. Ramchandran, D.S. Chatterjee & A. Lahiri). Shri A.S. Bhattacharya, Scientist, CFRI, under training in West Germany at present, also attended the conference.

Dr N.K. Panikkar, Director, Indian Programme of International Indian Ocean Expedition, New Delhi, attended the meeting of the International Coordination Group of the International Indian Ocean Expedition held in Paris during June 7-9,1965. He also participated in the following meetings held in Rome during June 10-25, 1965: Standardization and Intercalibration; Executive Committee of the Scientific Committee on Oceanic Research; Bureau of Intergovernmental Oceanographic Commission; and Food and Agriculture Organization 44th Session of the Council.

After the above meetings Dr Panikkar visited Oceanographic Institutes in West Germany for a period of two weeks.

Dr M.L. Dhar, Director, CDRI, Lucknow, returned on June 15, 1965 after a 5-week tour of U.S.A. and U.K. where he visited various pharmaceutical and drug research laboratories to acquaint himself with the recent advances in the field of drug research.

Dr N.K. Kapoor, CDRI, Lucknow proceeded to West Germany on June 24,1965 for advanced study in the field of Biophysics under the German Academic Exchange Service.

Shri A.K. Bose, Defence Coordination Officer, CSIR, New Delhi returned from U.S.S.R. on June 28, 1965 where he had gone to acquaint himself, with the work in the field of 'Planning of Scientific Research'.

Honours & Awards

Dr M.K. Chakraborty, Scientist, CMRS, Dhanbad has been recognised as a research guide for Ph.D. (Science) and an expert in D. Phil. (Medical) Committee of the Calcutta University in the subject of Industrial Toxicology. He has also been elected a member of the Sectional Committee of the Physiology Section of the Indian Science Congress for the year 1965-66.

Shri P. Prabhakaram, Scientist, NML, Jamshedpur—Ph.D. (Banaras Hindu University), thesis: *Studies on ion-exchange of clays with special reference to the effect of exchangeable cations on thermal behavior of kaolinite.*

Shri Dara Satya Sundar, RRL, Bhubaneswar—Ph.D. (Andhra University); thesis: *Studies on Solvent Extraction of Blue Perchromic acid.*

Research Papers

Kar, Amiya B., Chowdhury, S.R., Chowdhury, A.R., Kamboj, V.P. & Harish Chandra (CDRI, Lucknow)—Changes in the biochemical composition of rhesus monkey pituitary in relation to suppression of gonadotrophic activity of estrogen. *Steroid*, April, 1965, 519.

Kamboj, V.P. & Kar, Amiya B. (CDRI, Lucknow)—Effect of iron salts on the genital organs and fertility of male rats. *Acta biol. med. german.*, **13** (1965), 928.

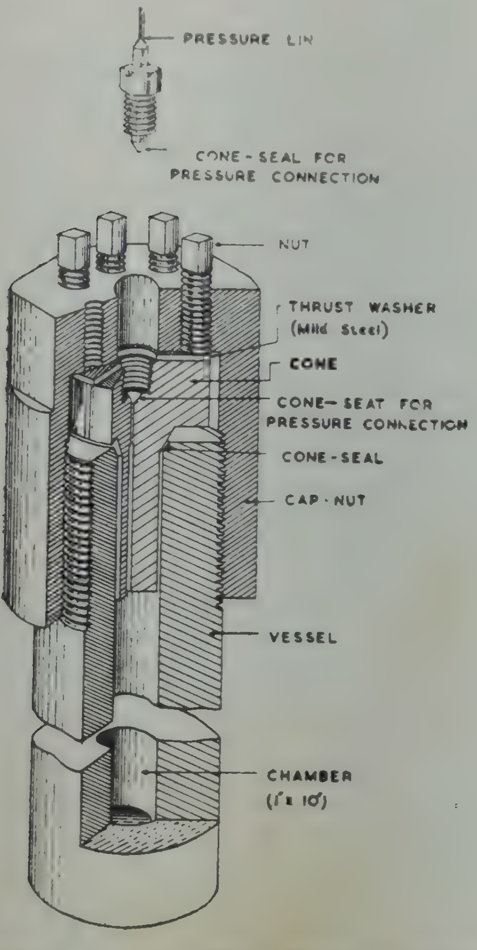
Jain, S.C. & Sootha, G.D. (NPL, New Delhi)—Electronic conduction in additively coloured KCl Crystals. *J. Phys. Chem. Solids*, **26** (2) (1965), 267.

Chari, M.S.R. (NPL, New Delhi) —Exchange interactions in dilute Ag-Mn alloys at Helium Temperatures. *Phys. Stat.*, **9** (1965), 103.

Singh, S.M. & Joseph George (CBRI, Roorkee)—Effects of some algicides on the strength development of cement paints. *Paintindia* **15** (1) (1965). 129.

RESEARCH PROGRESS

(Contd from p. 1, col. 3)


PRESSURE LIN
CONE-SEAL FOR PRESSURE CONNECTION
NUT
THRUST WASHER (Mild Steel)
CONE
CONE-SEAT FOR PRESSURE CONNECTION
CONE-SEAL
CAP-NUT
VESSEL
CHAMBER (1" x 10")

CGCRI, Calcutta—High-Pressure autoclave

pressures upto 15,000 psi at 400°C. indefinitely have been successfully designed and fabricated. These are suitable for hydrothermal growth of single crystals. While designing, care has been taken to eliminate parts which are likely to be deformed, such as gaskets, O-Seal rings and delta seal rings and also to avoid remachining of some of the components altogether or be kept minimum. In these autoclaves the internal pressure is recorded by means of Bourdon gauge and the temperature differential between the nutrient and growth zones is recorded with the help of external thermocouples. Owing to poor corrosion resistance of stainless steel to alkali media as compared to materials like stellite, inconel X and udimet 500, a carbon steel liner has also been designed and fabricated. Growth runs have been successfully conducted in the autoclave—P. Saha.

Sponsored Research

Rain & Cloud Physics Research—Investigations in respect of the following items were carried out during 1964-65 : (i) Measurements on hygroscopic and nonhygroscopic aerosol content in ground layers at Delhi, Agra, Jaipur, Jawai catchment (Rajasthan) and over the high ranges at Munnar (Kerala) ; (ii) precipitation and air chemistry ; and (iii) cloud seeding experiments at Delhi, Agra, Jaipur, Munnar and Jawai. The following significant results have been reported.

The pattern of variation of the aerosol content at Delhi, Agra and Jaipur has been found to be broadly similar. The hygroscopic component increases significantly with the on-set of the monsoon whereas the non-hygroscopic component is seen to undergo a marked decrease. The proportion of the hygroscopic component in the total aerosol is about 25 per cent at Delhi, 17 per cent at Agra and 10 per cent at Jaipur during the monsoon period. The particulate matter is found to be high at Jaipur and low at Agra. The proportion of the hygroscopic particulate matter in the total aerosol at Munnar is less than what it is at Delhi during the monsoon inspite of its (Munnar's) nearness to the sea. Examination of the aerosol data has shown that the magnitude of the hygroscopic nuclei component, and also its proportion in the total nuclei, in the giant size range, are high at Jawai as compared to what have been usually found at Agra, Delhi and Jaipur.

Samples of rain water collected with progress of rain shower on a number of occasions have been studied in respect of their chemical composition and it was observed that the concentrations of various cations and anions increase with progress of rain shower. The anion and cation contents are poorly correlated. A comparative study of the chemical nature of the contents of hail stones and rain water, carried out at Naini Tal, has suggested a detectable difference in the chemical contents between hail and rain. Study on the effect of trace gases on the nucleating ability of the ice forming aerosol has suggested that the efficiency of ice nuclei might decrease with increase in the total content of trace gases in the atmosphere. Estimation of *p*H in rain water samples was found to be necessary in order to obtain possible insight into how trace gases and various condensation nuclei present in the atmosphere enter into life cycle of cloud and rain.

The over all result of seeding experiments carried out during monsoon period at Delhi and Agra is found to be positive while at Jaipur it is negative. Experiments carried out in the catchment area of Javi River (Rajasthan) also showed positive results. Cloud stimulation experiments organised during March to May, over the tea plantations in the mountainous regions at Munnar indicated a 26 per cent increase in the target area rainfall—Rain and Cloud Physics Research Unit, NPL, New Delhi.

PATENTS

Filed

99721 : *Improvements in or relating to a mounting for the drafting board with provisions for angular and height adjustments of the board*—T.S. Chennabasavan, CMERI, Durgapur.

99788 : *A process for the manufacture of mangrove extract*—D. Ghosh, CLRI, Madras.

100146 : *Spring powered energy storing unit*—S.N. Bhagi, CMERI, Durgapur.

Accepted

90057 : *Improvements in or relating to electric incandescent filament lamps*—Atma Ram, B.M. Bishui & Jagdish Prasad, CGCRI, Calcutta.

Sealed

85959 : *A reactor for carrying out high temperature reactions involving solids and gases*—K. Seshacharyulu, Y. Venkatesham, D.S. Datar & S.H. Zaheer, RRL, Hyderabad.

CEYLON

5333 : *A process for the direct solvent extraction of fresh coconut kernels for recovery of oil and edible meal*—B.H. Krishan, V.B. Shanbhag, K.G. Ramaswamy & M.V. Rao. CFTRI, Mysore.

ITALY

675032 : *A process for the manufacture of high alpha cellulose dissolving grade pulps by alkaline pulping methods*—G.M. Vyas, D.S. Bendale & M.B. Mahajan, NCL, Poona.

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CSIR NEWS

VOL. 15 JULY 30, 1965 : SRAVAN 8, 1887 NO. 14

CENTRAL FOOD
10-8-65
LIBRAR
MYSORE

Symposium on Technology of Rice and Rice Products

A symposium on Technology of Rice and Rice Products will be held at the Central Food Technological Research Institute, Mysore during August 19-22, 1965 under the joint auspices of the Institute and the Association of Food Technologists (India), Mysore.

Unesco Seminar

A Seminar on 'Science Policy and Research Organisation' is being organised by Unesco at Sydney, Australia, during Aug. 10-Sept. 2, 1965 to enable scientists from South and South East Asia exchange and discuss their own experience in the organisation of scientific research. The inauguration of the Seminar by Sir Fredric White, Chairman, Commonwealth Scientific and Industrial Research Organisation, Australia, will be followed by syndicate discussions and visits to various laboratories of the organisation.

Shri A. Rahman, Scientist-in-charge Survey and Planning of Scientific Research Unit, CSIR (India) will be acting as the Associate Director of the seminar.

RESEARCH PROGRESS

National Laboratories

IIP, DEHRA DUN

Continuous Mixer-Settler for Solvent Extraction studies of Lube Stocks—A continuous counter-current Mixer-Settler unit has been fabricated and set up in the Separation Process Laboratories for obtaining design data for the solvent extraction of lubricating oil stocks from indigenous crudes. It can also be used with minor modifications for the solvent extraction of inferior kerosene for improving its smoke point.

The unit consists of eight integrated Mixer-Settlers assembled to operate in a countercurrent fashion. Suction of the solvent and feed streams as well as the mixing of the two phases is done in each of the cells by a central plunger fitted with several perforated Teflon discs. The amplitude as well as frequency of the stroke of the plunger can both be regulated.

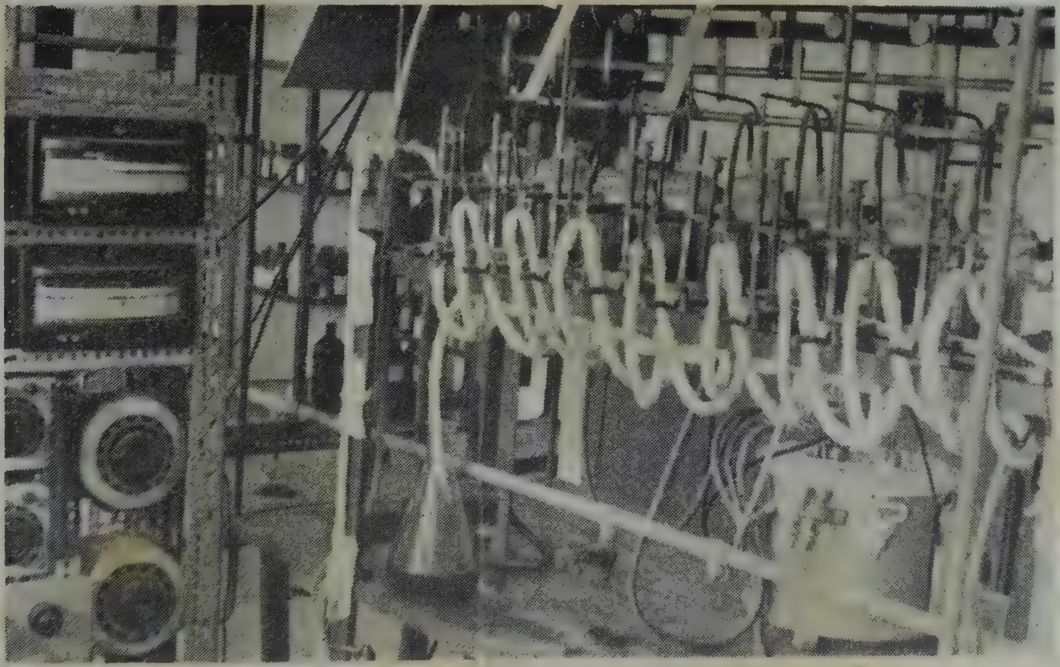
A special feature of the unit is the flexibility in operating conditions like feed solvent ratio, mixing time, temperature etc. The important characteristics of the assembly are: that only two pumps (one for the feed and the other for the solvent) are required for a multistage operation; a temperature gradient can be maintained very easily in the unit; and rates of different input streams to any particular stage or of mixing of the two streams in any stage may be controlled independently.

The unit will have solvent recovery and recycle systems, running in conjunction with the extraction operation. It is now being used for studying the solvent extraction of lube distillates from Nahorkatiya crude.

CFRI, JEALGORA

Characterisation of Low Temperature Tar—In connection with project-studies for integrated development of coal-based industries, investigations on the characterisation of tar from low temperature carbonization of Barachak coals were carried out. Distillation of tar under atmospheric pressure, and subsequent processing gave an yield of 34 per cent pitch, softening point 88°C. (R & B), about 20-25 per cent tar acids, 2.5 per cent tar bases and 40 per cent neutral oil. The tar acids comprise phenol 5.1 per cent, cresols 13.7 per cent, xylenols 8.3 per cent and medium boiling (upto 270°C.) and higher boiling phenols 23 & 25 per cent respectively. The neutral oil fraction did not contain any particular component in economically recoverable concentration. However, the naphthenic and paraffinic side-chains linked to the aromatic nucleus make the oil suitable for reactions like dealkylation, hydrogenolysis, oxidation, etc., leading to products of commercial interest

(*Contd on p. 4, col. 1*)



IIP, Dehra Dun--Continuous mixer-settler

BRIEFS

Symposium on Chemistry of Terpenoids

A symposium on Recent Advances in the Chemistry of Terpenoids, organised by the National Institute of Sciences, India & Kurukshetra University, was held at NCL, Poona during June 7-10, 1965. Besides 10 scientists from abroad, about 140 scientists from various universities and institutes in India attended the symposium. More than 70 papers were read.

Regional Coal Survey Station, Jammu

The third annual meeting of the Advisory Committee for the Regional Coal Survey Station of CFRI at Jammu was held on June 23, 1965 at RRL, Jammu, with Dr K. Ganapathi, Director of the laboratory, in the chair. Besides considering the report of the work done at the Survey Station during 1964, the utilisation potentialities of the coals from Jammu & Kashmir and also the most advantageous application of suitable drilling operations with a view to improving the seams and assessing their quality were discussed. It was recommended that the commercial possibilities of the briquetting process developed for coal fines (available in large quantities from the Jammu coal areas) using inorganic binders, such as, cement, plastic clay, etc., should be explored. Recommendations were also made for studying the combustion characteristics of low volatile coal of high incombustible matter content (30 per cent or above) from Kalakot. The quality and utilisation possibilities of lignites occuring in Nichahom area were also discussed.

CSIR Annual Report: 1964-65

The Annual Report of CSIR for 1964-65 has been published. The Report (pp. viii+208) summarises the multiphasic activities of the Council during the year under report and includes the work of the National Laboratories and Units, Research Associations, and sponsored research, and Reviewing Committee report, Fourth Five-Year Draft Plan proposals, recommendations of Society, Governing body, Board and Research Committees, and international collaboration, training courses, etc., besides the brief record of research work summarised under subject headings arranged according to UDC. The appendices, occupying 150 pages, include among others the lists of members of various committees and Executive Councils, National laboratories / Institutes, their Units & Field Centres, and Cooperative Research Associations, foreign exchange saved by way of design and fabrication of equipment and apparatus; schemes sponsored by outside organisations; publications; processes which have gone into production and released for commercial devlopment to industry; patents; distribution of research schemes and fellowships institution wise; and the laboratory-wise details regarding staff, research fellows, research papers published and patents and processes developed. In the end, summaries of income and expenditure and the consolidated statement of liabilities and assets of the Council are given.

NAL, Bangalore

The Inter-University Board of India and Ceylon, have recognised the Laboratory as a centre of research work leading to the award of higher degrees in Science and Engineering.

Trainees at NAL, Bangalore

Sarvashri Arun Kumar Sehra & Sudhakar Sharma, Senior Students, Aeronautical Department of Punjab Engineering College, Chandigarh joined the laboratory on June 14, 1965 for six-months practical training.

Lectures at NCL, Poona

Prof. Poltorak, Visiting Professor, Chemical Engineering Department, IIT, Bombay, delivered the following lectures in a seminar at the laboratory during June 4-6, 1965: Kinetics of heterogeneous catalytic reactions; Heat disorder in real crystals and activated centres of catalyst; and Electronic theories of catalysis on semi-conductors.

Dr H. Mc Nair, Wilkins Instrument and Research Corporation, U. S. A. delivered a lecture on 'Preparative scale for gas chromatography' on June 18, 1965 at the above seminar.

Lectures at CDRI, Lucknow

Dr L.B. Clapp, Brown University, Providence, USA delivered a lecture on 'Small molecules' on July 6, 1965.

Dr M. Goldman, National Institute of Health, U.S.A. delivered a lecture on "Recent investigations on strain differences in *E. histolytica*" on July 12, 1965.

Dr J. Van Winkle, Ohio State University, U.S.A. delivered a lecture on "Studies on structure of DNA" on July 12, 1965.

Visitors

Mr A. H. Hams, Director of Research & Mr S. B. McKensey, Member, Board of Directors of the Australian Coal Association, visited CFRI, Jealgora on July 6, 1965.

Shri Ranbir Singh, Minister P.W.D. Buildings and Roads, Government of Punjab, visited CRRI, New Delhi on July 11, 1965.

Mr Ian Langlands, Director of Building Research, CSIRO, Australia, visited CRRI New Delhi on July 13, 1965.

Mr J. R. Grahame, American Vice-Consul & Mr H.G.D. Rozario visited NML, Jamshedpur on July 14, 1965.

A team of Soviet Engineers Conducting tests at the coke ovens of Bhilai Steel Plant on various blends for the Bokaro Steel Plant visited CFRI, Jealgora on July 14 & 15, 1965.

STAFF NEWS

Appointments

Dr (Smt.) R. Sundaram, Pool Officer, NPL, New Delhi (May 1, 1965)

Shri S.N.B. Murthy, Scientist, NAL, Bangalore (May 20, 1965)

Shri M.S. Subba Rao, Scientist, CFTRI, Mysore (June 6, 1965)

Drs S.B. Badachappe and (Km.) Raj Mathur (June 11, 1965) &

U.N. Upadhya (June 15, 1965), Scientists, NCL, Poona.

Dr A.P. Jain, Scientist, NPL, New Delhi (June 17, 1965)

Dr S.N. Datta & D.S. Bhakuni, Scientists, CDRI, Lucknow (July 1 and 3, 1965 respectively)

Resignations

Dr Rajendra Aneja, Pool Officer, NPL, New Delhi (June 24, 1965)

Drs G. Narasimhan & N.B. Desai, Scientists, NCL, Poona (June 28 & 30, 1965 respectively)

Shri S. Ethiraj, Scientist, CFTRI, Mysore (July 15, 1965)

Transfer

Dr A.C. Majumdar, Scientist, CDRI, Lucknow—IIBEM, Calcutta (July 17, 1965)

Nominations

Shri K.G. Krishnamurthi, Officer on Special Duty, NAL, Bangalore—Member, Faculty of Science, University of Bangalore, Bangalore.

Shri T.V. Ramamurti, Scientist, NPL, New Delhi—Member Sub-Committee on Raw Materials and Components of the Technical Committee for Electronics, Ministry of Industry & Supply, New Delhi.

Dr K.S. Chari, Scientist-in-charge, Central Design & Engineering Unit, CSIR, New Delhi—Member, Joint Committee of Indian Central Oilseeds Committee and CSIR.

Shri A.P. Chowdhury, Scientist, NML, Jamshedpur—Member, Sub-Committee on Raw Materials and Components of the Technical Committee for Electronics, Ministry of Industry & Supply, New Delhi.

Shri R.M. Krishnan, Scientist, NML, Jamshedpur—Co-opted Member of the Foundry Panel of the Indian Engineering Association for the year 1965-66.

ISI Nominations

Sarvashri D.D. Jatkar & M.S. Kumaraswamy, Scientists, RRL, Hyderabad—Principal and alternate members respectively, Paper Sectional Committee.

Deputations

Dr D.S. Datar, Scientist in-charge, CSMCRI, Bhavnagar returned from West Germany on May 20, 1965 after staying for 17 days, under the German Academic Exchange Service.

Dr M.S. Iyengar, Director, RRL, Jorhat returned on June 28, 1965 after a three-week tour of Germany and France at the invitation of the German Academic Exchange Service and the Institute Francais Du Petrole.

Shri S. Balakrishna, Scientist, NAL, Bangalore has been deputed to Canada for a period of five months with effect from June 15, 1965 for attachment with the works of the Canadian Vickers Ltd, Montreal under the 4-ft wind tunnel contract agreement.

Shri H.S. Dewan, Scientist, CEERI, Pilani, proceeded to East Germany on June 22, 1965 for 12-month training in Ferromagnetic Resonance Absorption of Microwaves under the German Democratic Republic Scholarship.

Shri R.S. Mahajan, Scientist, CEERI, Pilani, left for West Germany on June 27, 1965, for advanced training in Electronics for a period of 18 months under a scholarship scheme of the German Academic Exchange Service.

Dr O.P. Srivastava, Scientist, CDRI, Lucknow resumed duties on June 29, 1965 after visiting a number of Institutes in Moscow under the Indo-Soviet Cultural Exchange Programme.

Dr S.C. Bhattacharyya, Scientist, NCL, Poona proceeded to U.S.S.R. on June 29, 1965 to deliver lectures at some Universities under the Indo-Soviet Cultural Programme.

Sarvashri M.A. Ramaswamy & B.G. Suryanarayana, Scientists, NAL, Bangalore returned from Canada on June 21 and July 1, 1965 respectively after completing their assignments with the Canadian Vickers Ltd under the terms of contract for the fabrication of the 4 ft. wind tunnel.

Dr A.R. Verma, Director, NPL, New Delhi left for West Germany and U.K. on July 3, 1965 at the invitations from German Academic Exchange Service & British Council respectively for a period of one month.

Dr Amarjit Singh, Director, CEERI, Pilani, proceeded to West Germany on July 4, 1965 on a study tour. He will also visit Holland in connection with the Television Project of the institute.

Dr K.N. Sinha, Director, CMRS Dhanbad proceeded to U.K. on July 8, 1965 to participate in the Fourth International Mining Congress, London and present a paper on "Economics of Coalfield Development in India". He will visit different Mining Research Establishments in U.K. and Coal Mining Machinery Exhibition in London after the Congress and attend the Organising Committee of the above Congress of which he is the member from India and some of the sessions of the Restricted International Conference of Directors in Safety Mines Research to be held in Sheffield.

Honours & Awards

Dr S.C. Bhattacharyya Scientist, NCL, Poona—D.Sc. degree of the Cambridge University, U.K.

Shri M.M. Paulose, RRL, Hyderabad—Ph.D. (Kerala University); thesis: *Keeping qualities of castor seed, cotton seed and their oils.*

Shri Mahesh Prakash Tyagi, CSIR Research Fellow, Delhi University, Delhi—Ph.D. (Delhi University); thesis: *Synthetic studies in the cyclo-octane series,* (Guide: Dr G.S. Saharia)

Shri U.N. Upadhya, NCL, Poona—Ph.D. (Poona University); thesis: *A theoretical study of phonon-magnon interaction in magnetically ordered systems* (Guide: Dr K.P. Sinha)

Shri T.C. Joseph, NCL, Poona—Ph.D. (Poona University); thesis: *Studies on sesquiterpenes—(Himachalenes)* (Guide: Dr S.C. Bhattacharyya)

Shri V.V. Dhekane, NCL, Poona—Ph.D. (Bombay University); thesis: *Macrocyclic Musk Compounds* (Guide: Dr S.C. Bhattacharyya)

RESEARCH PROGRESS

(*Contd from p. 1, col. 3*)

like benzene, naphthalene, phthalic acid, maleic acid, etc. Broad fractions of the neutral oil are found to possess properties specified for low speed diesel, wash oil for scrubbing, benzole and naphthalene from coke oven gases, etc. The characteristics of tars obtained by low temperature carbonization of the coals from Singareni and South Balenda are being investigated for similar purpose.

CSMCRI, BHAVNAGAR

Semi-Mechanised Salt Harvester—A semi-mechanised salt harvester, capacity 10 tons/hr has been designed and fabricated. It weighs about 230 kg. and exerts a pressure of 0.35 kg./sq. cm. on the soil.

The harvester has an inclined blade which cuts into the salt when manually pulled forward and the layer of salt thus cut slides over the blade on to the moving conveyor belt which transfers the salt into the trailer or van moving behind the harvester. The thickness of salt to be harvested is accurately controlled by means of a wheel fitting at the front, which greatly minimises the chances of removing mud along with the salt.

The harvester has been successfully tried in the Experimental Salt Farm of the Institute—R.P. Dhiman & R.V. Bhatt.

CECRI, KARAIKUDI

Anodic Phosphating of Steel—A simple and economic process for phosphating steel, called 'Anodic Phosphating', has been developed. The process makes use of cheap alkali metal phosphates in the bath and the phosphating is done at room temperature by controlling the metal solution potential with the help of a constant voltage source, as against the conventional phosphating processes employing heavy metal phosphates in the bath, with bath temperatures around the boiling point to get sufficient coatings within a reasonable time, and also requiring frequent bath control. By varying potential, concentration of bath and *p*H, phosphate coatings of any desired weight in the range 0 to 650 mg. per sq. dm. can be obtained. Laboratory tests on specimens treated by this process have proved its acceptability.

CSMCRI, Bhavnagar—Semi-mechanised salt harvester

Sponsored Research

Dielectric Contribution to Activation Energy in Ion-Ion Reactions : Kinetics of the reactions of Ferricyanide ion with Iodide, Arsenite, & Sulphite ions were studied in media of different dielectric constants with a view to understanding the mechanism. For the reaction between ferricyanide and iodide ions, the product of the charges of the reacting ions ($Z_a \times Z_b$) involved in the rate determining steps and the radius of the activated complex, were determined at 30°, 35°, and 40°C. The radius of the activated complex was found to be equal to 2.65×10^{-8} cm. while the average value of the product ($Z_a \times Z_b$) was equal to 3, showing thereby that the main rate determining step occurs between a trivalent and univalent ion.

In case of ferricyanide ion and arsenite ion the value of the product of the charges of the ions involved in the main rate determining steps was determined by employing Bronsted's equation. These measurements were carried out at four temperatures (25°, 30°, 35°, and 40°C.). The value of the radius of activated complex was found to be equal to 2.90×10^{-8} cm. while the value of $Z_a \times Z_b$ was equal to 9. This indicates that the main rate determining step involves ions each of which is trivalent.

The product of the charges of reacting ions in ferricyanide and sulphite ion reaction was found to be 6 which shows that the main rate determining step occurs between a trivalent ion and a bivalent ion.

The isocomposition activation energy in the reaction between ferricyanide and arsenite ions has been determined with different composition of alcohol-water mixture. It has been observed that the activation energy increases with the increase in the concentration of alcohol—Bal Krishna, R.S. Singh & A. Masood, Allahabad University, Allahabad (Dec. 1, 1961—Feb. 28, 1965).

NCL, Poona

Technical know-how for the fabrication of electron-para-magnetic resonance spectrometer and vapour phase chromatograph is available for commercial exploitation. The prototype units fabricated in the laboratory have been tested and found to give satisfactory performance.

Correction

CSIR News, Vol. 15, No. 13, dated July 15, 1965, page 1, Col. 2, first para, line 11, please read as 'Frequency band for islolation greater than 20 db, 8.2-12.4 kMc/s.' instead of 'Frequency band for isolation, 2 db'

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CSIR NEWS

VOL. 15 AUG. 30, 1965 : BHADRA 8, 1887 NO. 16

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LIBRARY

SEMINAR ON ELECTROCHEMISTRY

A seminar on 'Electrochemistry' is being organised by CECRI, Karaikudi, during Dec. 26-29, 1965. There will be seven technical sessions in the Seminar, on (i) Electrode kinetics, Electrochemical equilibria and Electro-analysis ; (ii) Electro-organic and Electro-inorganic products ; (iii) Electrothermic and Electrometallurgy ; (iv) Batteries ; (v) Electrodeposition of Metal Finishing ; (vi) Corrosion ; and (vii) Miscellaneous.

Further details can be had from Dr K.S. Rajagopalan, Convener of the Seminar, CECRI, Karaikudi-3.

SYMPOSIUM

A symposium on 'Recent advances in development, production and utilisation of medicinal and aromatic plants in India' will be held at Lucknow on January 12, 13 & 14, 1966 under the auspices of the Central Indian Medicinal Plants Organisation (CIMPO). The symposium will confine itself to the developments in production and utilisation of medicinal and aromatic plants in India since 1955. Some of the important aspects of the symposium are:

(i) Distribution, acclimatization, collection and cultivation of the plants; codes of practice for their storage, handling, processing, etc.

(ii) Improvement of the plants by methods of selection, hybridization, induced mutations, etc.

(iii) Pests and diseases of the plants and their control.

(iv) Standardization of plant materials, process equipment, etc., with a view to upgrading the yield and quality of the products derived therefrom.

(v) Pharmacological and microbiological studies on products derived from them.

(vi) Studies of their insecticidal, insect-repellent, pesticidal and fungicidal properties of medicinal and aromatic plants and the products derived therefrom.

(vii) Their utilisation based on their chemical and phytochemical studies.

(viii) Subjects of vital interest such as Nematode problem in patchouli, Spike disease of sandalwood, utilisation of non-citral portion of lemongrass oil, etc.

(ix) Survey and availability of medicinal and aromatic plant materials and products made therefrom, their import and export.

Details regarding contribution of papers and other information, can be had from Dr S.C. Datta, Central Indian Medicinal plants Organisation, 4 Sapru Marg, Lucknow.

RESEARCH PROGRESS

CGCRI CALCUTTA

High-Alumina Refractories—High-alumina refractories with alumina content between 70 and 95 per cent are not manufactured in India. A process has now been developed by which refractory bricks containing 70 to 95 per cent alumina can be manufactured entirely from indigenous raw materials. The noteworthy features of such high-alumina refractory bricks produced at the Institute are : (i) low porosity, (ii) high value of refractoriness under-load (Ta — 1670°C.), (iii) very high spalling resistance, (iv) high resistance to abrasive action and corrosion, and (v) very high cold crushing strength of about 25,000 lb./sq. in. These bricks can be used in soaking pits, reheating furnaces, blast furnaces where extremities of temperature, corrosion, erosive action and thermal shock are very severe.

CRRI, NEW DELHI

Lime Puzzolana Concrete—Investigations on the use of lime-puzzolana concrete as a construction material were carried out in view of its reasonably high binding power in mixture having surkhi of high lime reactivity. It has been found that this material can be used with advantage as a substitute for lean cement concrete in various works, such as bases under rigid and flexible pavements, foundation concrete. When used as base course in pavement, the concrete has been found to have added advantage of greater strain-taking-capacity (because of its higher flexural strength : modulus of elasticity ratios) as compared to lean cement concrete of same strength.

Taking advantage of the high degree of bond strength that can be achieved between lime-puzzolana concrete and plain cement concrete, when the latter is laid within one hour of the former, a technique of pavement construction using suitably designed lime-puzzolana concrete as bounded underlay under thin cement concrete surfacings has been developed This type of composite construction is not only cheaper than the conventional cement concrete pavement without any impairment of strength, but also results in saving in cement. It has been found that the load carrying capacity of a composite slab of 6 in. thick bonded lime-reactive surkhi concrete base under 3 in. of cement concrete surfacings, is equivalent to a 7½ in. cement concrete slab whereas its cost is less by 20 per cent. The technique, when used for laying small experimental lengths has shown encouraging results. Full scale trials are in progress.

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BRIEFS

Scientists' Promotion

The CSIR has adopted a new principle of promotion to provide incentive and encouragement to scientists of ability and remove frustration among those who get clogged for want of vacancies in the next higher grade.

The work of the scientists in all grades below that of Assistant Director will now be assessed once in five years and any scientist who has done good work will automatically be promoted to the next higher grade without depending on any vacancies in posts.

However, in the case of scientists in the grade of Rs 700-1250, the five-year assessment rule will apply only when the scientist after the completion of five years, is at the maximum of the scale of pay of his grade for at least one year.

In respect of those up to the level of Rs 700—1250 grade, the assessment may be done even before five years on the completion of one year's service at the maximum of the grade.

The advantages of the new scheme are that the promotion does not depend on vacancies in the next higher grade and that scientists with good record need not look for jobs outside CSIR.

Wealth of India

The Editorial Board of *Wealth of India* has been reconstituted for a period of 3 years with the following members: Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research; Dr M. S. Randhava, Director-General, Intensive Agricultural Areas, Ministry of Food & Agriculture; Dr H. Santapau, Director, Botanical Survey of India; Dr J. Dubashi, Deputy Director, Economic & Scientific Research Foundation; Dr S. P. Verma, Industrial Adviser, Development Wing, Ministry of Commerce; Shri Baldev Singh, ILEO, CSIR; Prof. B.R. Seshachar, Professor of Zoology, University of Delhi; Shri J.P. de Sousa, Editor, Chemical Age of India; and Shri S.B. Deshaprabhu, Scientist-in-charge, PID (ex-officio Secretary).

Chemical Engineering and Designing Unit at RRL, Jorhat

A Chemical Engineering and Designing Unit has been constituted recently at RRL, Jorhat with the following objectives: (i) Designing of necessary pilot plants for processes worked out in the Laboratory and to transform them for industrial application; (ii) carrying out techno-economic surveys and preparing project reports for processes referred to the laboratory by outside agencies; (iii) undertaking installation and commissioning of industrial plants developed in this laboratory; and (iv) to foster the discipline of Chemical Engineering and maintain a pilot plant section on various unit operations which could be utilized for multiplicity of purposes.

SITRA Conference

The seventh conference on Human Relations in Industry, organised by South India Textile Research Association (SITRA), was held at Coimbatore during July 26-28, 1965. It was inaugurated by Shri D. Sanjivayya, Union Minister of Labour and Employment and attended by about 400 delegates from about 150 organisations. Besides, delegates from member mills of SITRA, representatives from various ministries of Government of India, Department of Industries, Labour and Commerce of State Governments of Madras, Andhra, Kerala and Mysore, a number of educational institutions, trade unions, employers' associations and research organisations participated in the conference. In all 11 reports were presented at the three sessions on Manpower planning and performance appraisal, Problems of expansion, and Welfare in industry during two day's of deliberations.

Water Supply and Waste Disposal at High Altitudes

The Proceedings of Symposium on 'Water Supply and Waste Disposal at High Altitudes', held at CPHERI, Nagpur on October 31, 1964, have been published. The publication (pp. xvii+65) includes the seven paper read and discussed at the symposium in addition to the welcome speech by the Director and an inaugural address. The discussions held during the session have been given at the end of each paper.

Pilot Pectin Plant at CFTRI

Shri M.C. Chagla, Union Education Minister and Vice-President, CSIR, inaugurated a pilot pectin Plant for the manufacture of pectin from papaya. The plant is expected to result in a saving of Rs. 2 lakhs annually in foreign exchange.

CFTRI, Mysore—Shri M. C. Chagla, Union Minister of Education & Vice-President, CSIR, discussing research programme on spices, during his visit on August 7, 1965.

Prof. G.S. Ramaswamy

Prof. G.S. Ramaswamy, Scientist-in-Charge, Structural Engineering Research Centre, Roorkee, has been appointed as Director of the Centre with effect from Aug. 12, 1965.

Prof. Ramaswamy (b. Oct. 3, 1923) received his B.E. degree in Civil Engineering in 1944 from the Madras University. After serving the Madras P.W.D. for a brief period, he proceeded to U.S.A. on a scholarship and obtained his M.S. and C. E. degrees in Structural Engineering from the California Institute of Technology in 1947 and 1948 respectively. On his return to India, he joined the Government College of Engineering, Kakinada in 1948 as Assistant Professor of Civil Engineering. In 1949, he shifted to Annamalai University as Professor and Head of the Civil Engineering Department where he started the country's first post-graduate course in Structural Engineering in 1953. He joined CBRI, Roorkee in 1956 as Assistant Director and was promoted as Deputy Director in 1960. On the establishment of Structural Engineering Research Centre at Roorkee, in June 1965, he was appointed as Scientist-in-charge.

Prof. Ramaswamy's special fields of interest are structural engineering and engineering education. He is largely responsible for popularizing and promoting the use of shell structures in India. The funicular shells developed by him and his colleagues found application on a large scale in "Operation Amar", the one crore Defence Housing Project at Ambala involving the construction of 1700 houses. He is a member of the Executive Committee of the International Association for Shell Structures and a member of the F.I.P. (Federation International de la Precontrainte) Commission on Prestressed Lightweight concrete. He has been member of expert panels of the Building Projects Team, Committee on Plan Projects of the Planning Commission and the National Productivity Council Team on 'Factory Buildings—Layout and Construction" and was deputed to Japan, U.S.A. and Italy in 1959. He is Chairman, Structures Group II of the Institution of Engineers (India), member of a number of committees of the Indian Standards Institution, and, as Chairman of the 'Criteria for Design of Structures' Sectional Committee, was largely responsible for initiating standardization in the field of shell structures and folded plates. He has been one of the Chairmen for the World Conference on Shell Structures held at San Francisco in October 1962, and his contributions in the field of shell structures won him international recognition. He presided over one of the sessions at the International Symposium on the Theory of Arch Dams held in April 1964 at Southampton, U.K. He shared with one of his colleagues, the John C. Gammon prize of the Institution of Engineers (India) in 1963.

He is the author of over 40 research papers in the field of Shell structures and prestressed concrete and two books, one on 'Cylindrical Sheets' (published by the National Buildings Organization) and the other dealing with the 'Analysis and Design of Shells and Folded Plates' (under publication by the McGraw-Hill Book Co., New York). He has two patents to his credit.

Dr A. Ofjord

Dr A. Ofjord joined CMERI, Durgapur as Chief Technical Adviser on Aug. 9, 1965. This is the second time he has joined this Institute.

STAFF NEWS

Appointment

Shri B.S. Rana, Scientist, CMRS, Dhanbad (July 15, 1965).

Deputations

Dr K.N. Sinha, Director, CMRS, Dhanbad returned from U.K. on July 27, 1965 after participating in the Fourth International Mining Congress held in London. He also visited mining research establishments in U.K. and Coal Mining Machinery Exhibition held in London and attended the meeting of the Organising Committee of the above congress and some sessions of the Restricted International Conference of Directors on Safety Mines Research in Sheffield during his stay in U.K.

Shri K.D. Sharma, Scientist, CSIO, Chandigarh, resumed duty on July 19, 1965 after completing his training in U.K. under the United Nations Fellowship.

Dr Hari Narain, Director NGRI, Hyderabad returned on June 3, 1965 after participating in the first meeting of the Co-ordinating Council of the International Hydrological Decade in Paris and visiting various scientific and industrial institutions in West Germany.

Research Papers

Sen, D. & Puntambekar, P. N. (NPL, New Delhi)—Series Interferometer : Fringe Irradiance Distribution. *J. opt. Soc. Amer.*, **55** (1) (1965), 192.

Rani Bai, P., Kamat, S.Y., Ghatge, B.B., Chakravarti, K.K. & Bhattacharyya, S.C. (NCL, Poona)—Terpenoids LXV. Transformation in the Santalene Longifolene series. *Tetrahedron*, **21** (1965), 629.

Mehra, M.M., Ghatge, B.B. & Bhattacharyya, S. C. (NCL, Poona)—Terpenoids LXVI. Ring enlargement produced by the alkaline fusion of w-Bromolongibolene. *Tetrahedron*, **21** (1965), 637.

Kapadi, A. H. & Sukh Dev (NCL, Poona)—Chemical transformation of (+)—Hibaene to (—)—Kaurene. *Tetrahedron Letters*, No. 18 (1965), 1225.

Radhakrishanan, P.V., Rama Rao, A.V. & Venkataraman, K. (NCL, Poona)—Two Hormones from *Artocarpus heterophyllus*. *Tetrahedron Letters*, No. 11 (1965), 663.

Singh, C. & Bhattacharya, B.K. (CDRI, Lucknow) — Antiheparin property of cationic complexes of cobalt, nickel and chromium and some organic compounds. *Arch. int. Pharmacodyn.*, **154** (1965), 290.

Bhattacharya, B.K. & Singh, C. (CDRI, Lucknow)—A comparative biological and chemical study of the heparin-like action of polyanionic compounds. *Arch. int. Pharmacodyn.*, **155** (1965), 326.

Chanan Singh (CDRI, Lucknow) —The use of ninhydrin in the detection of cationic complexes of cobalt, nickel and chromium. *J. Chromatogra.*, **18** (1965), 194.

RESEARCH PROGRESS

(*Contd from p. 1, col. 3*)

SASMIRA, BOMBAY

Thermal Conductivity Apparatus—A Thermal Conductivity Apparatus for the purpose of determining thermal insulation properties of certain textile materials used for garments, tents and sleeping bags for extreme cold climate has been fabricated. The apparatus, once calibrated with fabrics whose thermal properties are predetermined, can determine the thermal insulation properties of any unknown textile material. Fabrication of this apparatus has saved a considerable amount of foreign exchange required to import such specialised equipment for research purposes.

New Processes

The following are the new processes evolved at the CSIR laboratories, and available for commercial exploitation :

1. Direct process for preparing the chlorides of barium and strontium from their sulphate minerals—NCL, Poona (Indian Pat. 72425).
2. Method for the production of superior grade (smoke point above 20 mm.) of kerosine and aviation turbine fuels from high aromatics content (above 40%) middle distillates of crude oil—CFRI, Jealgora (Indian Pat. 79211)
3. Manufacture of Hard Ferrites NPL, New Delhi (Indian Pat. 93725).
4. Manufacture of 'Glass & Calomel' Electrodes for *p*H metres —CGCRI, Calcutta (non-patented).
5. Modification of aluminium base alloys containing silicon—NML, Jamshedpur (Indian Pat. 76415).

Process Ready for Commercial Exploitation

Industrial Counter—An inexpensive industrial type counter has been designed and developed at CEERI, Pilani. It consists of cold cathode trigger tube operating on the principle of gas discharge. The maximum speed is about 300 counts per second which is much faster than that of electromechanical type counters. Count pulse may be generated with a photocell and lamp arrangement. The input circuits are to be designed for particular applications, for example, electromagnetic pick-up, etc.

By incorporating rotary switches, counting of a predetermined number can also be done. At the end of a count, a signal is generated. This feature would be useful for batch counting applications, such as, counting of freight wagons in a marshalling yard, counting of tablets and phials in the pharmaceutical industry, etc.

Licences Issued during June 1965 for Processes

1. Electrolytic Iron Powder (CECRI, Karaikudi)—M/s. Chettinad Electrochemicals, Avanipatti P.O., Ramnad Dist.
2. Manufacture of Microwave components (CEERI, Pilani)—M/s. Arjuna Electronics Private Ltd., Hyderabad.
3. Improvement in or relating to the manufacture of Lime Reactive Surkhi Mixture (CRRI, New Delhi)—M/s (1) Amar Nath Bhaskar Sons, Ishwar Nagar, New Delhi and (2) M/s Minerals and Industrial Corp., 52, Govindappa Naick St., Madras-1.

PATENTS

Filed

100313 : Improvements in or relating to etching of foils of aluminium or aluminium alloys for capacitors—B.A. Shenoi, K.R. Narasimhan, V. Srinivasan & A. Anantharaman, CECRI, Karaikudi.

Accepted

90092 : *Improvements in or relating to fire retarding paints*—S.B. Roy & D.B. Gupta, CGCRI, Calcutta.

90674 : *A process for the production of activated carbon suitable for phosgene manufacture or for decolourisation*—R.T. Thampy & S.R. Goel, SRIFIR, Delhi.

90113 : Improvements in or relating to a process for the metallisation of non-conductors—S.B. Roy, S.S. Mandal & H.D. Sarcar, CGCRI, Calcutta.

Sealed

85447 : Heat flow transducer—Mohan Lal Gupta, CBRI, Roorkee.

NOTIFICATION

It is proposed to appoint a Scientist in the scale of Rs. 1600-100-1900 (Project Incharge for the Test Track Project) for the Central Road Research Institute, New Delhi. The incumbent is to be a Scientist of high calibre with the following qualifications and experience : (i) High academic qualifications in Highway Engineering with a good record of research and practical experience in the investigation, design, construction and maintenance of different types of flexible and rigid pavements ; (ii) Ability to plan, programme and conduct full scale field research test tracks on highway payments ; and (iii) Upto date knowledge in the theory and practice of Highway Engineering, including use of equipment and machinery. *Desirable :* Experience of the use of modern instrumentation techniques as applicable to full scale field experimental research on highway pavements, and published research work of high standard.

There is no standard form of application. Those who wish to be considered are invited to send a statement to the Director General, Scientific & Industrial Research. Others who wish to send nominations for this post may kindly forward their proposals to the Director General.

All communications will be treated as *confidential*. Statements and proposals should be received by the Director General on or before Sept. 30, 1965 at the office of the Council of Scientific & Industrial Research, Rafi Marg, New Delhi.

Any further information in this connection may be obtained *confidentially* from Secretary, Council of Scientific and Industrial Research, Rafi Marg, New Delhi.

NEW PUBLICATION

Water Supply and Waste Disposal at High Altitudes

Contains seven papers pertaining to problems of water supply and waste disposal at high altitudes, presented at the Symposium held at the Central Public Health Engineering Research Institute, Nagpur on Oct. 31, 1964.

Pp. xviii+65 ; Royal 8 vo — Price Rs. 8.00

Copies available from :

Director,
Central Public Health Engineering Research Institute,
Nehru Marg, Nagpur-3.

Printed and published by Shri S. A. Chari, Editor, Publications & Information Directorate (CSIR), Delhi-12, at Asia Press, Delhi-6.

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CSIR NEWS

VOL. 15 SEPT. 15, 1965 : BHADRA 24, 1887 NO. 17

CENTRAL FOOD TECHNOLOGICAL 12-10-65 LIBRAR MYSORE

Governing Body & Board Meetings

Meetings of the Board of Scientific and Industrial Research and Governing Body will be held on Oct. 6 and 7, 1965 respectively at 10 a.m. in the Conference Room of the Ministry of External Affairs, New Delhi. Shri Lal Bahadur Shastri, Prime Minister and President, CSIR will preside.

A meeting of the Committee of the Board and Governing Body will be held in the Conference Room of the CSIR Secretariat, New Delhi on Oct. 5, 1965 at 10 a m. Dr. S. Bhagawantam will preside.

Exhibition of Indian Scientific and Technical Publications

An exhibition of Indian scientific and technical publications, published during 1960-65, is being organised by the Publications & Information Directorate, CSIR at New Delhi in February 1966. Books including text books for schools and colleges, journals, bulletins, encyclopedic works, dictionaries, etc. in Indian languages and in English will be displayed. It is also proposed to bring out a directory of the publications displayed in the exhibition giving full bibliographic details.

This is the second exhibition. The first exhibition was held in February 1960 in which scientific and technical publications brought out up to 1959 were displayed.

All publishers, universities, research institutions, learned societies, etc. are requested to participate in the exhibition by sending two copies of each publication for display to Shri V.K. Saxena, Publications & Information Directorate, Hillside Road, New Delhi-12 latest by Oct. 15, 1965. The publications will be returned after the exhibition and all the participants would be supplied *gratis* a copy of the directory of publications displayed at the exhibition. Further details can be had from Shri Saxena.

RESEARCH PROGRESS

National Laboratories

CMRS, DHANBAD

Petrological Studies on Gassy Coal—Dishergarh seam of the Raniganj Coal Measure presents problems in its mining due to high gas emission from the coal. To investigate the factors responsible for the gassiness of the coal, its petrological properties have been investigated. It has been found that the exinite group of macerals are mainly responsible for the methane evolution from the coal. The concentration of the exinite in the vitrain and fusain-free bands of the coals are as follows (in per cent, and on mineral matter free basis):

Dishergarh seam (C. Colliery), 8.1 to 17.1 : Dishergarh seam (S. Colliery), 4.3. to 11.2; Ushadanga seam, approximately 8.9; and XII seam 2.7.

The percentage of hydrogen in coal as a parameter to indicate the extent of methane occurrence has been found to be valid in these cases.

CGCRI, CALCUTTA

Use of Indian Pyrophyllites in Refractories—Investigations carried out on Indian pyrophyllites have shown that they can effectively replace fire-clay grog in producing refractories with low porosity, low linear change on reheating, high strength and good resistance to spalling. Also, they can partially substitute raw plastic clay in batch composition of aluminosilicate refractories and at the same time improve the properties of refractories fired at about 1350°C. The pyrophyllites can be profitably employed in the manufacture of saggars, volume stable and dense pouring refractories for iron and steel, impervious combustion tubes and high frequency insulating tubes for carbon resistors and other electrical insulators. Firing temperature of 1450°C. is recommended for the production of impervious combustion tubes.

RRL, JORHAT

Drilling Mud Additives—A process has been developed for preparing higher alkyl aromatic sulphonates for use as drilling mud additives from iomex, a waste product obtained during refining of superior grade kerosene by the Indian Refineries Limited. The sulphonates are used as drilling mud additives and can find use in the oil well drilling operations as well as in the secondary recovery of oil from the petroleum wells. The large scale trials envisaged, if proved successful could mean a saving in the foreign exchange as most of the requirements are at present met by imports. The sulphonates made at the laboratory will shortly undergo field tests at Duliajan.

Sponsored Research

Studies on Plant Phosphatases—The mechanism of the action of phosphatase preparation from leaves of *Canavalia ensiformis* and *Dolichos lablab* on substrates of varying structures containing various alkyl and aryl residues has been studied.

Four different preparations of phosphatases from *Canavalia ensiformis* obtained as acetone-dry powder, were studied for their activities in acid as well as alkaline medium against nine different substrates, viz. glycerophosphate, pyrophosphate, phenyl phosphate, butyl phosphate, glucose-6-phosphate, glucose-1-phosphate, fructose-6-phosphate, fructose-1:6-diphosphate and adenosine monophos-

(Contd on p. 4, col. 2)

BRIEFS

Symposium

A two-day Symposium on "Industries and Industrial Potentials of the Jammu and Kashmir State" was organised at the Regional Research Laboratory, Jammu during July 30-31, 1965. Representatives of State Governments, and private and public sector industries participated in the Symposium. In all, thirty papers covering food, fruits, essential oils, drugs, paper and pulp, leather surface coating materials, cement minerals and animal wealth, and other potential resources of the state, were presented and discussed.

CPHERI, Nagpur

A joint meeting of the Special Committee and the Scientific Subcommittee of the Executive Council of the Central Public Health Engineering Research Institute, Nagpur, was held at Nagpur during August 6-7, 1965 and considered (i) Project-wise distribution of the work of the Institute and its background information, and (ii) Research programme of the Institute for the Fourth Five-Year Plan period, and their allied matters.

Pilot Plants at CPHERI, Nagpur

A pilot plant high grade digester from sewage sludge has been designed at the instance of the Municipal Corporation, Hyderabad and is being constructed with a view to find out its economic feasibility. Adoption of high rate digestion is being considered to reduce the cost of the conventional digesters. The digesting unit has been completed and the other auxiliary units are under construction. The plant is expected to be commissioned in two or three months.

Another pilot plant for treatment of liquid wastes obtainable from the LTC plants at RRL, Hyderabad has been designed, incorporating two of the most potential biological systems, viz. high rate trickling filter, and oxidation ditch (a simplified form of activated sludge). The units have been designed in a way that the effect of these treatments can be judged individually as well as in combination with each other. An oxidation pond which is one of the recent innovations in waste-treatment has also been provided as a secondary polishing device. The plant is expected to be commissioned in about three months.

CMRS, Dhanbad

The Station is now equipped to conduct anchorage tests and to investigate the effectiveness of roof bolting support. The anchorage testing of mine roof bolts is very important in estimating the efficiency of any roof bolt installation. Also during the experimentation, the behaviour of the bolted roof should be carefully studied by scientific investigations to make sure that the bolts are effectively supporting the roof. The anchorage tests have been completed in four mines and systematic bolting support is being studied in two collieries. These investigations will provide specific information regarding the length of the bolt required, the number and type of bolt and the optimum hole diameter for achieving the best anchorage efficiency in any particular mine.

Demonstration of New Facilities at CMRS

Special demonstration of new testing facilities for permitted class of explosives, strength and safety of detonators, complete testing of wire ropes including their strength, microstructure and metallography, crushing strength of timber props, non-destructive tests for assessing the quality of mining gear such as chain, hooks, capples, was put up for the benefit of mining engineers at CMRS, Dhanbad on Aug. 29, 1965. Over hundred members of the Indian Mine Managers' Association availed the opportunity and made detailed inspection of the facilities offered to the mining industry. Great interest was evinced in the testing of wire ropes, permitted explosives, detonators, for which new indigenous manufacturing capacity has been established in the country.

Refresher Course at CECRI

A refresher course on 'Corrosion and its Prevention' conducted by CECRI, Karaikudi was inaugurated on August 2, 1965. Eleven candidates including five from various Government departments and undertakings have joined the course. The course will last five weeks.

Training Courses at CEERI

Twenty-five students were trained at CEERI, Pilani during June-July 1965 in the following disciplines of electronics engineering: Audio Engineering and Acoustics, Communication Systems, Microwave Solid State Devices, Solid State Devices, Industrial Engineering, and Electronic Instrumentation.

Science in India

Science in India is the title of a booklet (pp. ii+67) recently published by the Survey and Planning of Scientific Research Unit, CSIR, New Delhi (author: Mohan Bhatia). The publication gives an idea of the expenditure on scientific research by the Centre and States as well as between various sectors of science and technology. In addition, there is information about the scientific societies and journals in India, research institutes, institutes of higher learning, universities and other establishments. The information classified statewise in tables is also illustrated by way of maps facing the tables and is supplemented through appendices given at the end.

Survey Report No. 4, SPSR Unit, New Delhi

A Study on the Foreign Exchange Conservation by the National Laboratories—This is a survey report, fourth in the series, brought out with a view to assess the contribution of scientific research institutions towards saving and earning of foreign exchange. It is based on the data collected from 15 laboratories of CSIR and the Shri Ram Institute for Industrial Research, Delhi. The first 18 pages of this 28-page publication include an introduction, followed by a chapter on methodology dealing with classification model adopted for arranging different types of contributions from laboratories, total foreign exchange conserved by 16 laboratories during 1958-59 to 1962-63, and conclusions of the study. The appendices, extending to 10 pages, comprise tables giving the distribution of the foreign exchange conserved by the laboratories under different heads, such as Design & fabrication; Direct production of import substitutes, Release of processes—industrial exploitation and gain thereby; Teaching and training activities; Exchange of periodicals & books; Consultancy services & testing etc. and a consolidated statement of distribution of foreign exchange (gross and net) conserved by national laboratories through various sources. The present study may serve as one of the concepted tools in deciding about the investment strategy for scientific research during the Fourth Plan.

CSIR Annual Report in Hindi

A Hindi version of the Annual Report of CSIR for the year 1964-65 has been published. It was placed on the table of Lok Sabha on Aug. 16, 1955 along with the English one. Printed in Royal octavo size, it runs into 201 pages.

This is the first time that a report has been brought out in Hindi by the Council.

CBRI Annual Report, 1964-65

The Annual Report of the Central Building Research Institute, Roorkee for the year 1964-65 has been published. Beginning with an introduction featuring the main achievements of the institute, the report (Royal 8vo, pp. ix+83) reviews the progress of research work carried out at the Institute under the following heads: Building material; Soil engineering; Structural engineering; Efficiency of buildings; Building processes; Plant and productivity; Architecture; Information and survey; and Extension. Information on important lectures, colloquia, seminars, visitors, etc. has been included in the appendices given at the end. Research papers published during the year have been given under different subject-heads.

Sponsored Research in National Laboratories

The following projects have been sponsored at the National Laboratories by the organisations named against them:

Further tests with Churcha coals for use at Bhilai Steel Plant using washed coals from W. Bokaro Dugda I and Bhojudih Washeries—National Coal Development Corporation (CFRI, Jealgora)

Investigation of eleven roads in Himachal Pradesh—P.W.D., Himachal Pradesh, Simla (CRRI, New Delhi)

Investigation of Leh-Kuru-Upshi Road — Director-General, Border Roads (CRRI, New Delhi)

Sijua Colliery Ventilation Survey —Tata's Sijua Colliery (CMRS, Dhanbad)

River Pollution survey for Agra Water Supply—Local Self-Government Engineering Department, Lucknow (CPHERI, Nagpur)

Manufacture of DDT from Petrochemicals and Recovery of Butanes at the Koyali Refinery—Ministry of Petroleum & Chemicals (IIP, Dehra Dun)

Training at CDRI, Lucknow

Shri G.C. Srivastava, IIP, Dehra Dun joined CDRI, Lucknow on Aug. 23, 1965 for 1½ months training in biochemical techniques.

Collaboration with Universities and other Institutions

Dr P.C. Datta, Lecturer, Department of Botany, Calcutta University, Calcutta received training in Tissue Culture Technique during May 6—June 2, 1965 at NBG, Lucknow under the U.G.C. Scheme.

Shri H. N. Nagaraj, Senior Scientific Assistant, Research Development (Engineers), Poona received training in the installation and maintenance of 12 V., 250 W. wind electric generator at NAL, Bangalore.

Dr S.A. Vasavada, Biochemist, Institute for Ayurvedic Studies and Research, Jamnagar, received training in the field of "Chemical Investigation of Natural Products" during July 19—Aug. 14, 1965 at CDRI, Lucknow under an ICMR Short-term fellowship.

Shri O.N. Devgan, Vikram University, Ujjain received training in Chromatography and other analytical techniques at NCL, Poona.

NAL, Bangalore

Sri Venkateswara University, Tirupati has recognised NAL, Bangalore as a research centre for research work leading to a doctorate degree of the University.

Visitors

Mr J.D. Welsh, Faculty of Architecture, University of Science and Technology, Kumasi, Ghana, visited CBRI, Roorkee on July 15, 1965.

Dr H.R.C. Pratt, Division of Chemical Engineering, CSIRO, Australia visited NCL, Poona on July 23, 1965 and gave a lecture on "Process development and chemical engineering research in CSIRO, Australia." He also visited NAL, Bangalore on July 24, 1965.

Mr Zenon A. Ziolinski, Ford Foundation Consultant visited CBRI, Roorkee on July 24, 1965 and delivered a lecture on 'Experience in the design and construction of precast prestressed structures in Poland'.

Dr Ing. Kurt J. Vogl of Hochtief AG, Germany, Prof. Lymon C. Reese, Professor and Chairman of the Civil Engineering Department of the University of Texas, Texas and Prof. George F. Sowers, Regents Professor in Civil Engineering, Georgia Institute of Technology, Atlanta, Georgia, visited CBRI, Roorkee on July 31, 1965. Prof. Sowers delivered a lecture on 'Foundation for the Rayburn Building, Washington' at the Institute.

Dr B.D. Laroia, Vice-Chancellor, University of Bangalore, visited NAL, Bangalore on Aug. 5, 1965 and discussed various aspects of collaboration between the Laboratory and the University.

Messrs T.J. Petrovski & V. Samonce, Technical Faculty, Shopie, Yugoslavia, visited CBRI, Roorkee on Aug. 6, 1965.

STAFF NEWS

Appointments

Dr T.R. Pattabhiraman, Pool Officer, CFTRI, Mysore (July 21, 1965)

Shri B.S. Ananthamurthy, Pool Officer, NAL, Bangalore (Aug. 18, 1965)

Shri J.C. Ghosh, Pool Officer, RRL, Jorhat (Aug. 25, 1965)

Shri C.R.S. Rao, Scientist, NR Unit, CSIR, New Delhi (Aug. 26, 1965)

Shri M.L. Jain, Scientist, CDB Unit, CSIR, New Delhi (Aug. 27, 1965)

Resignation

Shri Shabeer Ahmed, Scientist, NAL, Bangalore (Aug. 13, 1965)

Nominations

Dr Bahadur Singh, Scientist, NBG, Lucknow—Member, Faculty of Science, Agra University, Agra.

Shri P.S. Nagpaul, Scientist, CEERI, Pilani—nominated by the Operational Research Society of India to serve as a Contributing Editor for International Abstracts in Operations Research, published by the International Federation of Operational Research Societies.

Dr G.K. Seth, Scientist-in-charge, CPHERI Hyderabad Zonal Centre —Member, Coordination Committee to work out a scheme for the Industrial Wastes Disposal Problem of the Synthetic Drug Project, Hyderabad, Government of Andhra Pradesh.

Dr S.L. Kapur, Scientist, NCL, Poona—Representative of NCL, Productivity Council for the Printing Industry.

ISI Nominations

Dr B. Basava Raju, Scientist, NAL, Bangalore—Member, Structural Safety Sectional Committee.

Dr Y. Venkatesham & Shri S.K. Grover, Scientists, CDE Unit, CSIR, New Delhi—Member & Alternate Member respectively, Process Vessels Sub-Committee, and Size Separation & Filtration Sub-Committee

Deputations

Dr S.C. Bhattacharyya, Scientist, NCL, Poona returned on July 29, 1965 after a 4-week visit to USSR under the Indo-Soviet Cultural Exchange Programme. He delivered lectures and took part in group discussions in different universities and research institutes in USSR.

Shri B.S. Kesavan, Director, Insdoc, New Delhi proceeded to Australia on Aug. 19, 1965 to participate in the Annual Convention of the Australian Library Association. Later, he would visit various universities and other institutions in Australia and will deliver lectures.

Shri N.N. Chatterjee, Scientist, CFRI, Jealgora resumed duties on Aug. 2, 1965 after completing his training in the field of Coal Technology at the Canada Department of Mines and Technical Surveys, Mines Branch, Ottawa under the Colombo Plan. During the course of his training, he visited various research centres in USA and Western Canada.

Shri T.K. Datta, Scientist, RRL, Jorhat proceeded to Japan on Aug. 27, 1965 for one year training in the field of Seismology and Earthquake Engineering at International Institute of Seismology and Earthquake Engineering, Tokyo under U.N. Special Fund Aid Programme.

Dr Prem Sagar, Scientist, CDRI, Lucknow resumed duty on Aug. 16, 1965 after attending post-graduate course in Modern Problems in Biology at the Czechoslovak Academy of Sciences, Prague under Unesco Fellowship.

Dr B.N. Singh, Scientist, CDRI, Lucknow resumed duty on Aug. 16, 1965 after participating in the 2nd Congress on Protozoology in London. He was the Chairman at one of the sessions on Ecology of Free-living Protozoa and presented a paper on Encystation and Excystation in Protozoa at the session on Morphogenesis and Life Cycles. He also visited the Wellcome Laboratories of Tropical Medicine London, National Institute of Medical Research, London and Rothamsted Experimental Station, Harpenden.

Honours & Awards

Dr K.N. Sinha, Director, CMRS, Dhanbad has been elected a Member, Institution of Engineers (India).

Dr Hari Narain, Director, NGRI, Hyderabad was elected as the Chairman, ECAFE Meeting of the Working Group of Experts held in Bangkok during July 5-17, 1965 to consider the possibility of joint geophysical survey of Asian offshore areas.

(*Contd from p. 1, col. 3*)

phate. All the preparations were found to be active against these substrates in acid medium but in alkaline medium, only the ammonium sulphate precipitate of the aqueous extract showed significant activity.

Kinetic studies of the hydrolysis of the aryl substrates, phenylphosphate, *meta*-and *para*-methyl phenyl phosphate and *meta*-methoxy phenyl phosphate by the enzyme preparations from *Dolichos lablab* were made and the first order velocity constant of the overall reaction, Michaelis constant, affinity constant, and thermodynamic parameters for the formation of the enzyme substrate complex, velocity constant for the decomposition of the enzyme-substrate complex, were determined. On correlating the affinity constants with Hammett's substituent constant, it was observed that with acetone dry powder the complex formation is facilitated by electron attracting substituents but with partially purified enzyme, by electron releasing substituents. The presence of the *m*-methoxy group brings in some extra factor to work besides its electronic effect and causes a higher rate for formation of the complex and reduced rate for its decomposition. Unlike others, this substrate further showed a significant positive entropy change resulting in a positive heat of reaction. The results have been explained by proposing a mechanism for complex formation which is an improvement upon that proposed by previous workers. The enzyme in its natural condition is considered to be attached to the substrate through hydrogen bonds which are formed between electron rich sites of the enzyme with hydroxyl groups and electron rich centres (oxygen atom) of the substrate with hydrogen donating sides of the enzyme. The oxygen atom of the *m*-methoxy group is also considered to take part in this combination thus showing that a substituent, besides its usual electronic effect, may play some extra part by virtue of the free electron in any of its atoms in the enzyme substrate reaction.

In the study of the influence of different alkyl groups on the activity of acid phosphatase from *Dolichos lablab*, different isomers of propyl, butyl and amyl phosphates were used as substrates. All the values mentioned earlier with aryl phosphate were also determined kinetically using acetone dry powder. Comparison of the affinity constants showed that presence of branches in the alkyl group causes enhanced rate of complex formation. This has been explained in terms of the inductive effect of the alkyl groups and also by postulating a special fitting of the isopropyl group in a suitable recess in the enzyme molecule—Dr R.L. Nath & Shri Indrajit Das, School of Tropical Medicine. Calcutta (July 5, 1962-Feb. 28, 1965).

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CSIR NEWS

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LIBRA
MYSORE

SYMPOSIUM

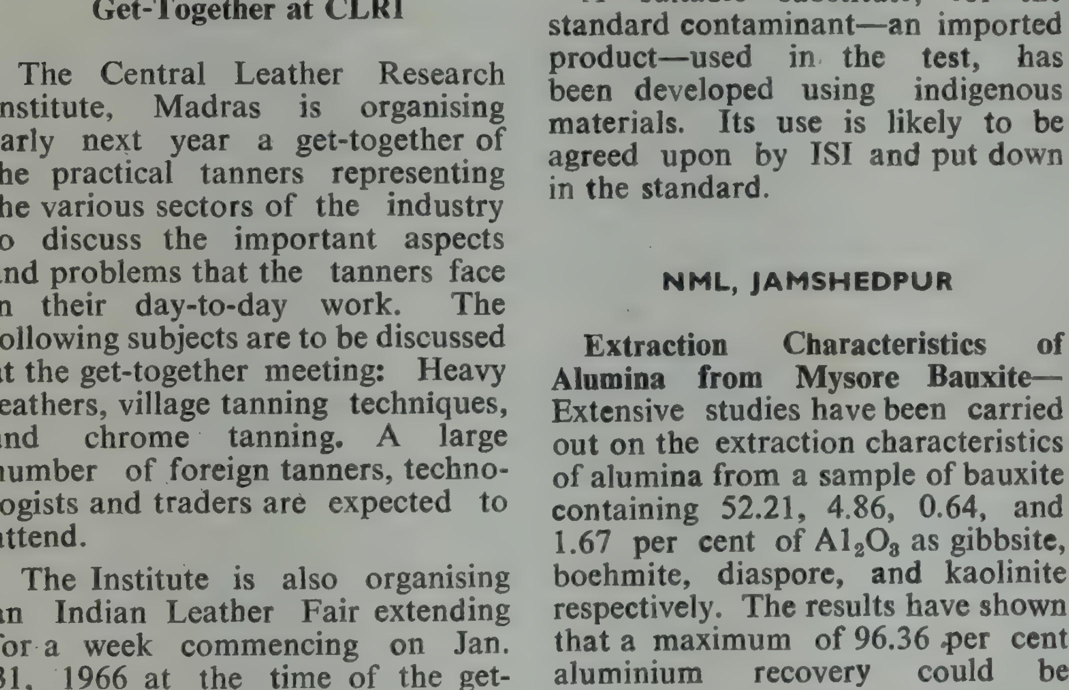
A symposium on 'Water Pollution Control' will be held at the Central Public Health Engineering Research Institute, Nagpur, during December 28-30, 1965. There will be four sessions covering the following aspects: (i) Sewage Treatment; (ii) Stream Sanitation; (iii) Industrial Waste Treatment; and (iv) Tertiary Treatment and Reuse of Effluent.

The last date for receiving papers is Oct. 11, 1965. Further details can be had from Dr C.A. Sastry, Convenor - Symposium, CPHERI, Nagpur-3.

Get-Together at CLRI

The Central Leather Research Institute, Madras is organising early next year a get-together of the practical tanners representing the various sectors of the industry to discuss the important aspects and problems that the tanners face in their day-to-day work. The following subjects are to be discussed at the get-together meeting: Heavy leathers, village tanning techniques, and chrome tanning. A large number of foreign tanners, technologists and traders are expected to attend.

The Institute is also organising an Indian Leather Fair extending for a week commencing on Jan. 31, 1966 at the time of the get-together.



CSMCRI, Bhavnagar—Experimental solar still for fresh water from sea water-pump, feed and fresh water tanks are at the backyard.

RESEARCH PROGRESS

National Laboratories

CMERI, DURGAPUR

Filter Testing and Development—A test rig for the assessment of fuel oil filters has been set up. Based on these tests industry is advised for the improvements required. Over half a dozen filter manufacturing firms are now utilising the facilities and the indigenous filters, now compete with imported ones in performance to a very great extent.

A suitable substitute, for the standard contaminant—an imported product—used in the test, has been developed using indigenous materials. Its use is likely to be agreed upon by ISI and put down in the standard.

NML, JAMSHEDPUR

Extraction Characteristics of Alumina from Mysore Bauxite—Extensive studies have been carried out on the extraction characteristics of alumina from a sample of bauxite containing 52.21, 4.86, 0.64, and 1.67 per cent of Al_2O_3 as gibbsite, boehmite, diaspore, and kaolinite respectively. The results have shown that a maximum of 96.36 per cent aluminium recovery could be obtained by atmospheric leaching of a 10 mesh (B.S.S.) ore with a solution containing 200 g. NaOH/litre and a minimum charging molar ratio of 2 moles of Na_2O per mole of Al_2O_3. The process of leaching was completed in a 30-minute cycle. Application of pressure was found to bring about little improvement in leaching. Dehydration of the ore above 200°C. decreased the alumina solubility to a great extent and has to be avoided. As the ore was low in silica content and highly gibbsitic, it was found to be quite suitable for Bayer's process.

CSMCRI, BHAVNAGAR

Experimental Solar Still to produce Fresh Water from Sea Water—A block of 5 stills of the Solar Still pilot plant has been constructed and is now producing 110 gal. of fresh water per day from sea water. The entire plant of 21 stills to produce 500 gal. of fresh water per day is expected to be completed by November, 1965.

CMERI, DURGAPUR

Dye Penetrants—Indigenous dye penetrants for surface and subsurface crack detection have been developed. These penetrants, currently imported, could be used with advantage by the aluminium, aircraft and stainless steel industries for detection of surface flaws. The penetrant consisting of a dye in a mixture of solvents enters the minute cracks or blow-holes invisible to the naked eye when sprayed on the surface to be tested. After a few minutes, the excess penetrant on the surface is washed away with a solvent followed by a spray with a solvent containing fine talcum suspended in it. This bolts out the penetrant, and reveals the defects on the surface.

(*Contd on p. 4, col. 1*)

BRIEFS

Bhatnagar Memorial Tournament 1965

The seventh Shanti Swarup Bhatnagar Memorial Tournament was held at the Regional Research Laboratory, Hyderabad during August 20-28, 1965. The tournament originally started in 1955 in memory of the late Dr S.S. Bhatnagar, was revived this year after a lapse of nearly 5 years. More than 400 participants from almost all the national laboratories took part in the tournament. The tournament commenced with the march past on the first day. Shri M. R. Appa Rao, Minister for Cultural Affairs, Government of Andhra Pradesh took the salute. At the opening function, Dr G.S. Sidhu, Director, RRL, Hyderabad and Chairman of the Managing Committee of the tournament welcomed the various participants. Dr S. Husain Zaheer, DGSIR, who was present on the occasion, addressing the participants, expressed the hope that the tournament would help in bringing about a spirit of camaraderie among the various laboratories located at different places in the country. Shri Nau Nihal Singh, Deputy Secretary, CSIR proposed a vote of thanks. Daily camp-fires provided an occasion for social get-together of the various participants. A brochure was brought out on the occasion giving a background of the tournament, daily programmes, the draws and the names of participating teams.

The prizes were given away by Smt. G.S. Sidhu at a colourful ceremony held on August 28, 1965 with Brigadier G.M. Sayeed as Chief Guest. The following are the results of the tournament;

Cricket : Winners—NPL, Delhi, Runners-up—NCL, Poona ; Volley ball: Winners—CDRI, Lucknow, Runners-up—NML, Jamshedpur ; Tennis : Winners—CFTRI, Mysore, Runners-up—NCL, Poona; Badminton: Winners—CPHERI, Nagpur, Runners-up—CFRI, Jealgora; Table Tennis : Winners—CFTRI, Mysore, Runners-up—NML, Jamshedpur; Best Bowling and Batting prizes: Shri Dalip Singh, NPL, New Delhi; and Best overall individual performance: Shri K.N. Iyer, NCL, Poona.

A special trophy called Dr S. Husain Zaheer Trophy, instituted this year by Dr S. Husain Zaheer, DGSIR, for the best overall team performance was awarded to CFTRI, Mysore.

Technology of Rice and Rice Products

A three-day symposium on 'Technology of Rice and Rice Products' was held at CFTRI, Mysore during Aug. 19-22, 1965 under the joint auspices of the Institute and the Association of Food Technologists (India) with the object of focussing attention on those problems of rice technology which should be accorded a high priority for research and technical development so that a lasting solution of the country's food problem may be achieved. About 150 delegates including scientists, technologists, millers, milling machinery manufacturers as well as representatives of Farmer's Forum, Union Food and Agriculture Ministry and Food Corporation of India attended the Symposium. Dr S. Husain Zaheer, DGSIR, Shri T.A. Pai, Chairman, Food Corporation of India, Dr J.T. Hogan of Southern Regional Research Laboratory, U.S. Department of Agriculture and Dr R.H. Richharia, Director, Central Rice Research Institute, Cuttack were among those who participated in the Symposium. Over 50 papers covering various aspects of research and development concerning conservation, processing, handling, storage and marketing of rice and rice products were discussed. Resolutions were passed on the following aspects of rice and rice technology at the concluding session : Cultivation of rice; Milling and Processing of Rice; Parboiling of Rice; Quality Standardisation of Rice and Rice Mills; Handling, Storage, Packaging & Marketing of Rice ; Chemistry and Nutrition of Rice; and Rice by-products. To coincide with the symposium an exhibition of machinery and equipment relating to processing, handling and storage of rice and rice products was also arranged.

Seminar on 'Sea Salt and Plants'

The dates of holding the three-day seminar on 'Sea Salt and Plants', being organised at CSMCRI, Bhavnagar, have been changed from Dec. 28-30, 1965 (*CSIR News*, Vol. 15, No. 15, Aug. 15, 1965) to Dec. 20-22, 1965.

Practical Demonstrations

The Central Leather Research Institute, Madras is organizing practical demonstrations on : (i) Manufacture of bag sole leather, at Hyderabad (Oct. 4-31, 1965); (ii) Colour finishing of vegetable

RRL, Hyderabad—Dr S. Husain Zaheer, DGSIR, addressing the participants at the opening ceremony of Bhatnagar Memorial Tournament tanned skins, at Bikaner (Oct. 6-31, 1965); (iii) Manufacture of glace kid leather, at Bombay (Oct. 11-Nov. 11, 1965); and (iv) Improved bag tanning method, at Kolhapur (Oct. 15-Nov. 4, 1965).

The Institute organized the following demonstrations during the months of September and October at places indicated against them: (i) Dressing of EI kips and skins and grain suede garments at Calcutta: (ii) Manufacture of chrome picking bands at Bombay; (iii) Manufacture of shrunken grain kid at Rajkot; and (iv) Manufacture of grain garment leather from raw sheep skins and of suede leather from raw sheep skins.

Visitors

Mr Jean Daridan, French Ambassador, visited IIP, Dehra Dun on Aug. 17, 1965.

Professor J.H. Leathem, Director, Bureau of Biological Research, Rutgers University, New Jersey, USA visited CDRI, Lucknow on Aug. 25, 1965 and delivered a lecture on "Protein nutrition and hormone secretions".

Dr N.K. Bhide, Associate Professor of Pharmacology, All India Institute of Medical Sciences, New Delhi visited CDRI, Lucknow on Aug. 24 & 25, 1965 and delivered a lecture on 'Histamine-liberating agents from frog skin''.

Collaboration with Universities and other Institutions

Drs V.V. Dadape, V. Damodaran, J. Gupta, & Shri S.S. Mahajan, NCL, Poona participated in a meeting on 'Chemical beneficiation of ilmenites and preparation of TiO_2 pigments' conducted by Metallurgy group, Atomic Energy Establishment, Trombay on Aug. 16, 1965.

Shri P.V. Somayajulu, Regional Engineering College, Warangal joined NCL, Poona for training in polarographic techniques.

Km. R.V. Prabhu, Department of Chemical Technology, Bombay, joined NCL, Poona as a Guest Worker in Organic Chemistry Division.

Shri D.C. Jain, Ministry of Industry and Supply, received training in interchangeable glass joints and glass blowing techniques at NCL, Poona.

NAL, Bangalore

Shri V.V. Giri, Governor of Mysore visited the Wind Tunnel Centre of the National Aeronautical Laboratory, Bangalore on Aug. 25, 1965 and turned the first sod for the low-speed Aerodynamics Laboratory building. He evinced keen interest in the high-speed wind tunnels (being set up), various electronic and instrumentation devices and the fast data processing systems developed at the Laboratory.

Defence Efforts at CLRI

The members of CLRI, Madras met on Sept. 8, 1965 under the chairmanship of Dr Y.Nayudamma, Director to consider the various steps that should be taken immediately towards war effort. A number of decisions were arrived at and put into action. The following are some of the decisions in which action has already been taken :

1. The Institute has already taken up the work of reorienting and recasting the research programme in such a way that the projects of defence interest, import substitution and export exchange earning, are given the top most priority to achieve quick and immediate results.

2. The members of the staff have spontaneously agreed to contribute a day's pay from their salary and wage for September, 1965 to the National Defence Fund.

3. A large tract of land in the campus is being prepared to be brought under cultivation for growing vegetables and the proceeds will be sent to the National Defence Fund.

Dr B. D. Tilak

Dr B. D. Tilak, Professor and Head of the Department of Chemical Engineering, University of Bombay, took charge as Joint Director, National Chemical Laboratory, Poona with effect from Aug. 5, 1965.

Dr Tilak (*b.* Sept. 26, 1918) had a brilliant academic career at Bombay University taking his B.Sc. (Chem.) and B.Sc. (Tech.) degrees in 1937 and 1939 respectively. Immediately after, he took to teaching and research in the same university and was awarded Ph.D. degree in 1943. He proceeded to Oxford in 1944 and received his D.Phil. degree

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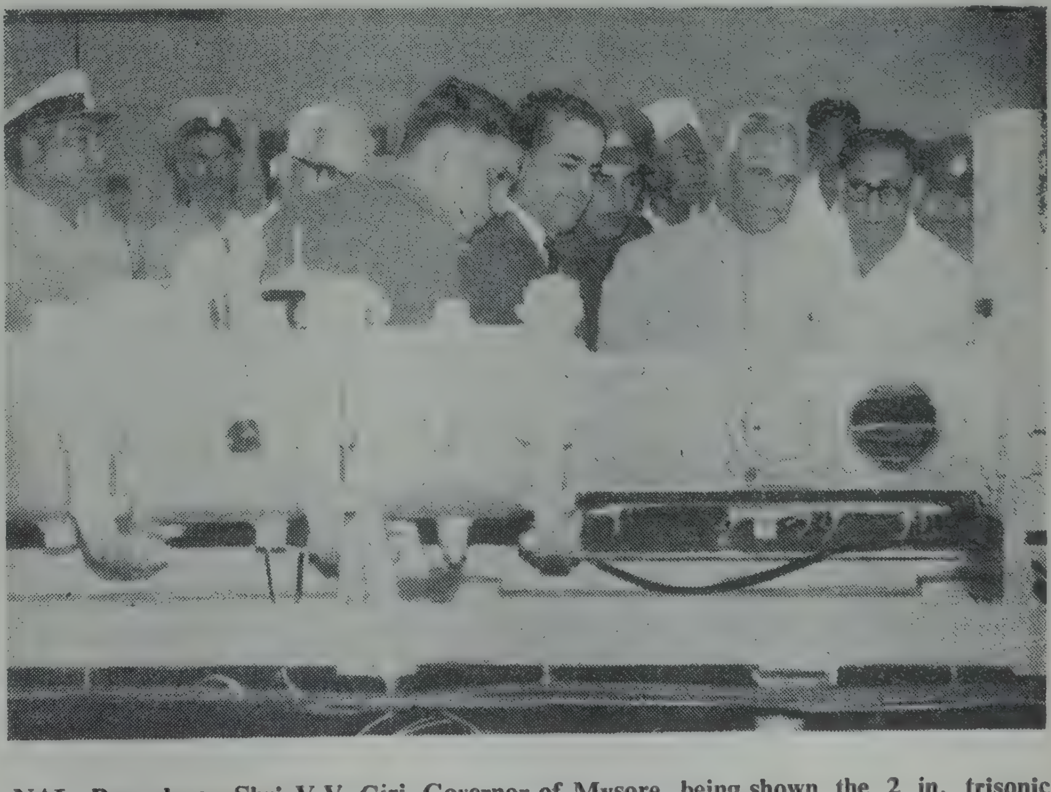

NAL, Bangalore—Shri V.V. Giri, Governor of Mysore, being shown the 2 in. trisonic wind tunnel during his visit on Aug. 25, 1965

(*Contd from p. 1, col. 3*)

Process Developed at CLRI, Madras

Manufacture of football leathers—A process has been worked out for the manufacture of football leather from indigenous raw materials. The leathers produced are comparable in quality to the imported varieties. The CLRI Regional Centre at Jullundur has taken up large scale production of this type of leather to meet local demands of sports goods industry and for export to earn foreign exchange.

Sponsored Research

Cross-bonded Viscose Fibres—The project was started to study the in-situ cross linking of viscose rayon with a view to impart desirable characteristics like high wet/dry tenacity ratio, high wet modulus, low water swelling. The following water soluble bifunctional compounds capable of cross-linking with cellulose under the conditions of viscose fibre manufacture were prepared and screened for achieving the objective: Tetramethylol acetylene di-urea (TMADU), Epichlorohydrin-formaldehyde - acetylene-di-urea condensate, Glycerol formaldehyde acetal, and Pentaerythritol.

Of these four compounds, TMADU and glycerol formaldehyde acetal showed promising results. In the case of TMADU it was necessary to keep the freshly spun acidic filament for an ageing period of 1-2 hr for completion of the reaction, where as in the case of glycerol formaldehyde acetal hardly any ageing was required. TMADU was effective only at 40 per cent concentration for getting definite improvement in wet strength and cuprammonium hydroxide insolubility. The glycerol formaldehyde acetal was effective even at 10 per cent concentration in imparting the desirable characteristics and did not require any ageing. Epichlorohydrin - formaldehyde - ADU condensate was comparatively less effective than glycerol-formaldehyde acetal and a good wet strength and reduction in water of imbibition was obtained only at 40 per cent concentration—H.R. Chipalkatti, K.N. Gupta, N.B. Sattur & S.D. Goyal, Shri Ram Institute for Industrial Research, Delhi.

(*Contd from p. 3, col. 3*)

from Oxford University in 1946. He has been holding teaching and research posts in the Department of Chemical Technology, Bombay University since 1940. He became Professor of Dyestuff Technology in 1950 in the same department.

Organic Chemistry and Chemical Technology have been the major fields of research carried out by him and he has made valuable contributions in those fields. He has been the investigator-in-charge for a number of industrial and fundamental research schemes of CSIR and other bodies, and his work in Dyestuff Technology has earned him a name in industry. He has published over hundred original research papers in Indian as well as foreign scientific journals on pure and applied organic chemistry. He was awarded the Basudev Banerjee Medal and Prize for the year 1959-60 by the Indian Chemical Society for his contribution in Organic Chemistry and K.G. Naik Gold Medal by the Baroda University in 1959 for the best contribution made by an Indian chemist in the field of industrial research during the last 5 years. He is consultant to Indian Dyestuff Industries, Kalyan and Messrs Aniline Dyestuffs & Pharmaceuticals Private Ltd, and his guidance is being commercialized by many other firms.

In 1951 he attended, as a Government of India Delegate, the Diamond Jubilee Celebrations of the American Chemical Society. He visited dyestuff factories in USA and Western Europe in 1952. During 1960-61, he proceeded to Harvard University and worked under Prof. R.B. Woodward. In 1961, he was awarded D.Sc. degree in Organic Chemistry by the Oxford University. He visited Poland, East & West Berlin, Czechoslovakia and Yugoslavia in 1962 as consultant to Aniline Dyestuffs and Pharmaceuticals Pvt. Ltd, and participated in the Second International Colour Symposium held at Schoss Elman, West Germany in April 1964.

Dr Tilak has been associated with the council as a member of its Pharmaceutical and Drugs Research Committee during 1959-62. At present, he is a member of the Board of Scientific and Industrial Research and its Sub-Committee, and Working Group of CSIR on its plans for Fourth-Five Year Plan. Dr Tilak is a Fellow of the National Institute of Sciences (India), and the Academic Council & Technology Faculty, University of Bombay. He is a member on several scientific research and cultural organisations including ISI Committee on standardisation of dyes for food, and coal tar intermediates.

Dr D. S. Datar

Dr D.S. Datar, Scientist-in-charge, CSMCRI, Bhavnagar has been appointed Director of the Institute with effect from Aug. 5, 1965.

Dr Datar (*b*. July 17, 1911) had his earlier education at Hyderabad and Poona, and obtained M.Sc. degree in physical chemistry from the Osmania University. Later, he worked at the Indian Institute of Science, Bangalore and was awarded the Ph.D. Degree by the Bombay University in 1942. He joined D.A.V. College, Sholapur in 1940 and was Head of the Department of Chemistry during 1942-46. Subsequently he joined the then Central Laboratories for Scientific and Industrial Research, Hyderabad as Scientific Officer and became Assistant Director in 1954. He was appointed Deputy Director-in-Charge CSMCRI, Bhavnagar in October 1962.

Dr Datar has worked on heavy chemicals, fertilizers, ceramics, X-rays and physical chemistry while at RRL, Hyderabad. After joining the CSMCRI, he formulated the research programme of the Institute project-wise. Some of the projects recently undertaken or intensified in the Institute by him are desalination of sea-water, experimental salt farm, potassium sulphate, magnesia, bromine and bromo compounds from sea water, seaweed as food, and cultivation of marine algae. He has published over 110 papers and has 24 patents to his credit. He is a member of several scientific organisations including Indian Institute of Chemical Engineers. He is a member of the Board of Directors, Hindustan Salts Limited, Jaipur and Development Council for Inorganic Chemicals, Government of India.

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CSIR NEWS

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GOVERNING BODY DECISIONS

The Board and Governing Body of the Council of Scientific and Industrial Research met in New Delhi on Oct. 6 & 7, 1965 respectively. Shri M.C. Chagla, Union Minister for Education and Vice-President of CSIR, presided.

Various aspects of Fourth Plan proposals of the Council drawn up by the Working Group were discussed. Shri Lal Bahadur Shastri, Prime Minister and President of the Council took part in the discussions and remarked that the scientists have a very vital role to play in the present context. He cautioned that a situation could arise when we may have to rely on our own resources. He struck a note of optimism that it is possible to meet our needs and requirements with active cooperation of our distinguished scientists. He affirmed that scientific effort would have his sympathy and support and exhorted the scientists to give their best in context of the present situation.

During the course of the meeting Dr S. Husain Zaheer, DGSIR explained that during the last 3 years every effort was being made by CSIR to orient the research programmes in the Laboratories towards defence, industrial and economic development in the country. In view of the recent developments a definite objective of reorienting all programmes towards defence, import substitution, and agricultural production had been initiated and rearrangement of the projects on these basis was being carried out.

The following are some of the important decisions of the Governing Body:

Fourth Five Year Plan Proposals—

(i) the highest priority should be given to projects concerning defence, food, import substitution and export promotion, and manpower, material and financial resources provided for these projects: Other scientific work should also continue but a proper system of priorities should be evolved consistant with the availability of resources;

(ii) the Governing Body desired that the 4th Plan proposals should be re-examined by the Working Group to re-orient as many of the programmes as possible to bring them under the objectives mentioned above.

(iii) the Working Group may consider the possibility of setting up an Institute during the 4th Plan period concerning technological problems of small industries, rural industries and the like since a proper scientific direction to these industries was of vital importance to the economy of the country.

(iv) highest priority be given to strengthening and broadening the activities of the National Register.

Technical Units at CSIR Secretariat—The proposals for the development of the following four technical units of the CSIR into separate directorates have been approved: Central Design and Engineering Unit, the Survey and Planning of Scientific Research Unit with International Collaboration Bureau, the National Register and Scientists' Pool Unit, and the Research Coordination, Industrial Liaison and Extension and Patents Unit.

Industrial Toxicology Centre—The proposal for setting up an Industrial Toxicology Research Centre at the Central Drug Research Institute, Lucknow was accepted. The functions of the centre will be to study the harmful effects of industrial toxins on skin, blood, gastro-intestinal tract, central nervous system, bones, etc.

Cooperative Research—The proposal for the formation of a Cooperative Research Association for Jute. The scope and functions of the Association will be coordinated with the functions of the Indian Central Jute Committee and the programme of work of the Jute Technological Research Laboratory so as to ensure a proper utilisation of resources.

(*Contd on p. 3, col. 3*)

RESEARCH PROGRESS

National Laboratories

CGCRI, CALCUTTA

Aluminium Titanate Ceramics—Aluminium titanate finds wide applications in the electronic ceramics and high temperature processes. Studies were undertaken to synthesise the compound from the commercially available raw materials of the country. Commercial alumina calcined at 1450°C. and titanium dioxide in the form of anatase were fused together at 1440°C. to give rise to the formation of aluminium titanate. Titanium dioxide when used in the form of rutile was found to increase the temperature of formation of aluminium titanate. The product obtained at 1450°C. was creamish in colour, had poor strength and the coefficient of expansion as 29.58×10^{-7}.

The effect of sintering of prereacted aluminium titanate in the presence of other materials, in order to improve upon its strength and other ceramic qualities, was also investigated. Alumina, added to aluminium titanate, increased the

(*Contd on p. 4, col. 1*)

BRIEFS

New President and Vice-President, SASMIRA, Bombay

Shri Shantilal M. Mehta, Partner of Paragon Textiles Mills, Bombay has been elected President of the Association for 1965-66. Shri Mehta has been the Vice-President of the Association for the last ten years. He is member on: Development Council for Textile Machinery, Board of Directors of the Silk & Art Silk Mills' Association Ltd and Administration Committee of the Silk and Rayon Textiles Export Promotion Council.

Shri Ganeshnarayan R. Podar, Director, Podar Group of concerns, has been elected as the Vice-President of the Association. Shri Podar is also the Chairman of the Rajasthan Textile Mills' Association and a member of the Development Council for Art Silk Industry, Bombay Port Export Production Advisory Committee, and Rajasthan Chamber of Commerce and Industry.

Students' Seminar at BITM

A Competitive Student's Seminar on the subjects: Man's hazards in space flight; Moon—our nearest neighbour; and Sputnik—the flying laboratory, was organised by BITM, Calcutta on Sept 14, 1965. Twenty-six students from different reputed schools, in and around Calcutta, participated in the Seminar. Many educationists and heads of the schools also attended.

Marine Algal Herbarium

A reference collection of the marine algae of India is being maintained at the CSMCRI, Bhavnagar. Out of the 350 species in 135 genera known for India, 177 species in 101 genera have been collected for the Herbarium. It is proposed to obtain specimens of marine algae from maritime countries, as the total world number is estimated at 6000 in 670 genera.

Collection, preparation and identification of marine algal specimens of the Gujarat coast are being carried out. About 2000 herbarium specimens representing 21 genera of green algae with 44 species, 20 genera of brown algae with 33 species and 60 genera of red algae with 100 species, have been identified and assigned accession numbers. Besides, over 2000 duplicates are being held for exchange.

NBG, Lucknow

The Banaras Hindu University, Varanasi has recognised NBG, Lucknow as a centre for post-graduate research in Botany and Plant Physiology leading to the award of Ph.D. Degree.

Process Developed at CLRI, Madras

Tanning & Finishing of Shark Skins—A process has been worked out for tanning and finishing of shark skins. The leathers produced are quite good for fancy articles, footwear and the like and may find a good export market. It is now proposed to carry out large scale trials at the Regional Extention Centre, Rajkot and study the potentialities of marketing these leathers in foreign countries.

CBRI, Roorkee

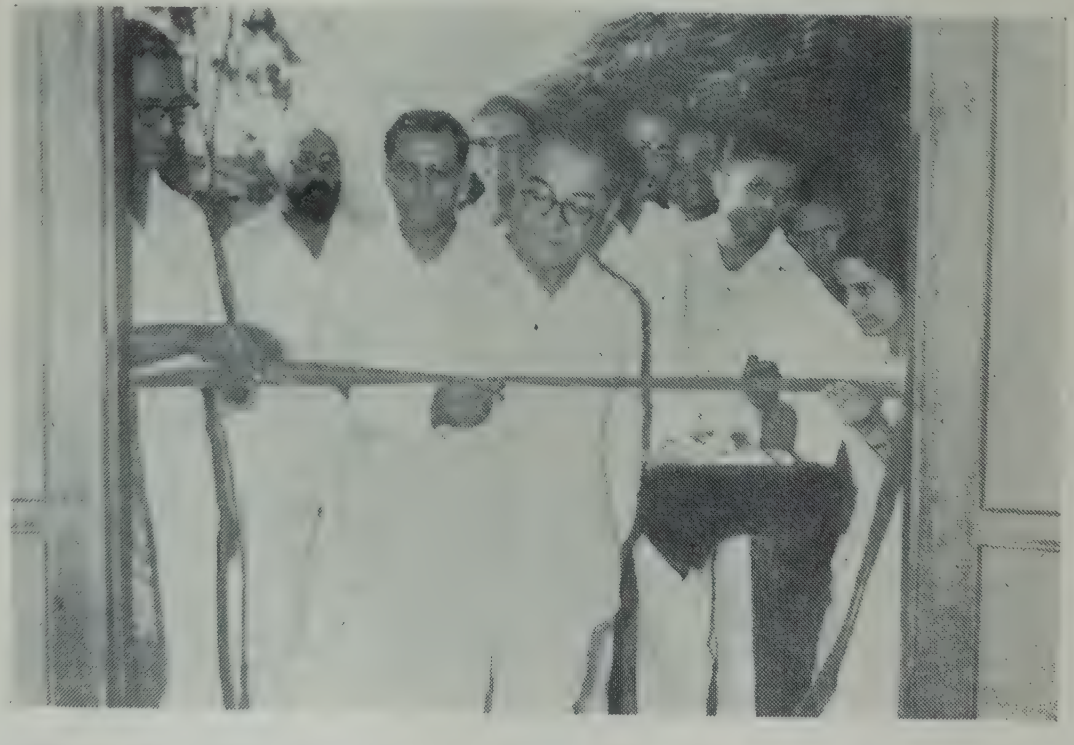
The new Physical Laboratory Building of CBRI, Roorkee was declared open by Dr S. Husain Zaheer, Director-General, Council of Scientific and Industrial Research at a function held on Sept. 22, 1965. The Director-General went round the Physics Laboratory and inspected some of the interesting projects connected with the illumination and ventilation of buildings and the non-destructive testing of concrete.

I.G.Y. Schemes at AIR

The consolidation of the following 5 research schemes, being worked at All India Radio, into one single scheme with the title 'Ionospheric investigations by A.I.R. for the IQSY' has been approved: (i) Round the clock observations of Ionospheric characteristics at Delhi, Bombay, Madras and Tiruchirapalli; (ii) Analytical studies of the Ionospheric characteristics measured by IGY & IGC at Delhi, Bombay, Madras and Tiruchirapalli Stations of A. I. R.; (iii) Measurement of Ionospheric absorption and drift at Delhi; (iv) Solar Flare Patrol on 164 kc/s; and (v) Investigations of Ionospheric drift by spaced receiver technique at Tiruchirapalli.

CRRI Annual Report

The Annual Report of CRRI, New Delhi for the year 1964-65 has been published. The report (pp. ix+82) summarises the progress of research work carried out at the Institute in the following divisions: Soils; Flexible Pavements; Rigid Pavements; Roads; Traffic Engineering; Economics and Statistics; Bridges; Extension and Information, and Operational Research. Besides the progress of research work, other concomitant activities such as technical training and deputations, technical advice and assistance rendered to other organisations,



CBRI, Roorkee—Dr S. Husain Zaheer, DGSIR cutting the tape for the opening of a new Physics Laboratory Building of the Institute

Institutes participation in different technical conferences, symposia, seminars, pilot plant schemes, patents etc., have been given under independent heads. Information concerning the functions of the Institute, staff, new apparatus and equipments, publications and visitors etc., is included in the seven appendices given at the end.

CMRS, Dhanbad

Survey of different categories of workers to dust exposure in mines carried out for the past three years has shown that there is a potentiality of health hazard from dust exposure in case of Indian Mine Workers as judged on the basis of recommendations of standard safe condition in U.K. & USA. The survey is still in progress.

Dr B.N. Mitra

Dr B.N. Mitra, Director, CIMPO, Lucknow retired from the service of the Council with effect from Sept. 10, 1965. Dr K. Ganapathy, Director, RRL, Jammu took over overall charge of the organisation temporarily with effect from the date of retirement of Dr Mitra pending the appointment of the Director, CIMPO. Dr S.C. Datta, Scientist, CIMPO is looking after the routine administration of the organisation under the guidance and the instructions of Dr Ganapathy with effect from the same date.

CMRS, Dhanbad — Apparatus for the collection of airborne dust by thermal precipitator

Dr P.C. Mehta

Dr Priyavadan Chhaganlal Mehta has been appointed Director, Ahmedabad Textile Industry's Research Association (ATIRA), Ahmedabad with effect from May 1, 1965.

After passing his Intermediate Science of the Bombay University from the M.T. B. College in Surat with a first class, Dr Mehta joined the Royal Institute of Science, Bombay for his B.Sc. degree in 1937. He passed B.Sc. in 1939, standing first among the B. Sc. chemistry students of the University. This earned for him the award of a Merit Scholarship from the Bombay Government to take his B. Sc. (Tech.) in Textile Chemistry with a first class in 1941 from the Bombay University.

Between 1941 and 1945 Dr Mehta worked in industrial establishments which included a period of two years at Tata Chemicals at Mithapur. Then he proceeded to USA under a Government of India Fellowship and worked for three years under Prof. Eugene Pacsu, a great authority in the Chemistry of Cellulose and Starches, at the Princeton University and the Textile Research Institute, Princeton. He was awarded the degrees of Master of Arts (1947) and Doctor of Philosophy (1948) by that University in recognition of his work on "Hydrolysis and Methanolysis of Cellulose". He joined ATIRA in 1949 as a Senior Research Scientist.

Dr Mehta has built up in ATIRA an outstanding school of work in the field of Cellulose Chemistry. The work of his school has ranged over a wide field from the oxidation of cellulose to the mechanism of bonding and cross-

(*Contd on p. 4, col. 3*)

Governing Body Decisions

(*Contd from p. 1, col. 3*)

Bhatnagar Memorial Awards for 1963 & 1964—The Shanti Swarup Bhatnagar Memorial Awards for the years 1963 and 1964 have been conferred on the following scientists for outstanding work in the fields of physical, chemical, biological, engineering and medical sciences: 1963 awards—Dr R. Ramanna (Physical Sciences), Dr B.D. Tilak (Chemical Sciences), Dr J. Ganguly (Biological Sciences), Dr Brahm Prakash (Engineering Sciences), Dr S. H. Zaidi and Dr B.K. Anand (Medical Sciences; to be shared equally); 1964 awards—Dr A.R. Verma (Physical Sciences), Dr Sukh Dev (Chemical Sciences), Dr D.S. Athwal (Biological Sciences), and Dr B.R. Nijhawan (Engineering Sciences).

Ad hoc Fellowships—It was agreed that the value of the fellowship awarded by CSIR should be Rs 300 a month to Junior Research Fellows, Rs 400 a month to Senior Research Fellows, and Rs 500 a month to Senior Research Fellows with Ph. D., M.D. and M.S. qualifications. Besides, the Junior Research Fellows are to get annually Rs 1500 and the Senior Research Fellows Rs 3000 contingent grant.

Aeronautical Research—The role of aeronautical research figured prominently in the discussions. It was decided that a committee consisting of the Director-General of Civil Aviation, Scientific Adviser to the Minister of Defence, the Director-General of Scientific & Industrial Research, and the Chairman of the Atomic Energy Commission may go into the question of setting up of a body for the coordination of aeronautical research and development work. The Governing Body also decided that Dr Vikram A. Sarabhai be included as a member of the Aeronautical Research Committee.

Popularisation of Science—It was recommended that the effort of CSIR towards the popularisation of Science in Indian languages should be intensified and the Council should make an attempt to bring out the publications in Indian languages within a year. International scientific terms and Roman numerals should be used as far as possible in the pamphlets and books to be published.

Research Progress

(Contd from p. 1, col. 3)

strength with simultaneous increase in the firing temperature and the coefficient of thermal expansion. Addition of clay along with calcium and magnesium carbonate resulted in moderate strength while composition with zircon and felspar gave lowest porosity and highest transverse strength.

The dielectric constants of the samples varied between 10 and 15. The volume resistivity was high and the log resistivity decreased hyperbolically with increase of temperature.

CLRI, MADRAS

Newer Fields of Application of Lac in Leather—The use of lac and shellac in leather industry has been limited to certain finishing formulations only. In order to enlarge the scope of application of this indigenous and abundantly available natural resin in leather, investigations were undertaken. For the first time, the lac resin was found to be useful in retanning-cum-impregnation of chrome tanned leathers. Use of 5-10 per cent of lac resin improved the quality of leathers considerably, especially the thickness, fullness, temper, etc.

Sponsored Research

Spectroscopic & Photometric Study of the Night Airglow—The nocturnal, seasonal and space variations of night airglow have been studied. The emissions of different radiations as also the heights of emission layers were deduced using the van Rhijn method. Inter-correlations between the different observed emissions and correlations with the other geophysical phenomena were deduced. The following significant observations have been recorded in the study of this phenomenon: (i) There is a principal maximum at about 1.5 hours before the local midnight and a subsidiary maximum at about 2.5 hours before sunrise, on the average, in the nocturnal variation of the intensity of λ 5577 emission. The other radiations also show somewhat similar variations but are not so well defined; (ii) The intensity of λ 5577 emission is maximum at about 20° geomagnetic latitude and falls off on both sides in the northern hemisphere; (iii) Contamination by OH radiation is important in case of intensities of λ 5577 & λ 6300; (iv) There is little correlation between the two atomic lines of oxygen, viz. λ 6300 and λ 5577. This conclusion is also confirmed by spectroscopic study; (v) A significant positive correlation is observed between zenith intensity of λ5577 and geomagnetic activity; and (vi) The height of λ 5577 emission layer is about 150 km. at Poona and varies with the total intensity of this emission; the tentative height estimations for λ 6300 and λ 5893 emissions are 168 km. and 176 km. respectively. (These are being revised). The conclusions and findings have been compared with and discussed in relation to those obtained by other workers in this field at other places—M. W. Chiplonkar, Department of Physics, University of Poona, Poona.

STAFF NEWS

Appointments

Sarvashri G. Varadarajan & B. B. Bhattacharya, Scientists, NGRI, Hyderabad (Aug. 16 and Sept. 10, 1965 respectively).

Shri M. Venkateshwara Rao, Scientist, CFTRI, Mysore, (Aug. 16, 1965).

Shri S. N. Karwanyun, P.A. (Tech.), CMRS, Dhanbad (Sept. 1, 1965).

Shri T. N. Tandon, Scientist, Science Reporter Unit, CSIR Secretariat, New Delhi (Sept. 15, 1965).

Deputations

Dr C.G. Joshi, Scientist, NCL, Poona proceeded to Geneva on Aug. 2, 1965 for studies in 'Laboratory techniques in the field of narcotics' for three months under the United Nations Technical Assistance Board.

Shri S. H. Iqbal, NCL, Poona proceeded to France on Aug. 12, 1965 for a 9-month training in the 'Chemistry of titanium compounds' at the University of Caen under French Government Scholarship.

Dr Hari Narain, Director, NGRI, Hyderabad attended a meeting of the Working Group of Experts organised by ECAFE, at Bangkok during July 5-17, 1965, to consider the possibilities of Joint Geophysical Surveys in Asian offshore areas of the ECAFE region. He was elected the chairman of the meeting.

Dr H.L. Uppal, Scientist, CRRI, New Delhi participated in the International Research and Engineering Conference on 'Expansive Clay Soils' held at College Station Taxas, USA, during Aug. 29-Sept. 4, 1965. He was elected chairman for one of the sessions of the conference and also a member of the International Panel for Presentation of Art of Dealing with World Problems on Expansive Clay Soils.

Dr A. Ghoshal & Shri N. Sen, Scientists, SPSR Unit, New Delhi visited Sydney (Australia) to attend the Unesco Conference on Science Policy and Research Organization held during Aug. 10-Sept. 2, 1965. Dr A. Ghosal, delivered a series of lectures for Theory of Queues and Storage at Sydney and other places in Australia during his stay.

Honour

Miss K. S. Indira, CECRI, Karaikudi has been elected Associate of the Royal Institute of Chemistry, London.

(Contd from p. 3, col. 2)

linking in cellulose molecules. This scholarship won him recognition by the Universities of Gujarat, Bombay, Baroda and Madras as a guide for Ph. D. work and a number of students working under him have obtained M.Sc. and Ph.D. degrees from these universities.

He has contributed over fifty publications including research papers, review papers and research reports.

He visited USA under the Point Four Programme for six months during 1955-56 to study the latest advances in textile research and also some of the leading laboratories in Europe.

As a member-secretary of the Textile Productivity Team deputed by the Government of India, he visited U.S.S.R. & Czechoslovakia.

He is a member on various Committees of I.S.I. connected with the textile industry; Expert Committee of State for revision in Syllabi in Technical Education, Government of Gujarat; Senate, Gujarat University; and Board of Studies—Physics and Chemistry, Gujarat University.

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R.N. 4212/5

CSIR NEWS

VOL. 15 OCT. 30, 1965 : KARTIK 8, 1887 NO. 20

12-11-65
LIBRARY

Symposium on CNS Drugs

A Symposium on CNS Drugs will be held during Jan. 24-30, 1966 at the Regional Research Laboratory, Hyderabad, under the auspices of CSIR. Nearly 45 leading organic and pharmaceutical chemists from India and abroad have been specially invited to present papers and more than 50 scientists from institutes all over India are expected to participate.

The papers will cover the following aspects of CNS drugs: (i) Chemistry and pharmacology of new drugs or new potential drugs (synthesis, chemical structure and structure-activity relationship); (ii) Pharmacology of known drugs and/or clinical observations with known drugs; (iii) Theories on the mechanism of action of CNS, and on development of tolerance; (iv) Physiological transport of drugs in the central nervous system and localisation of the drugs in the brain; (v) Metabolic transformation of the drugs.

Further particulars may be obtained from Dr P.B. Sattur, Regional Research Laboratory, Hyderabad-9.

Shri M.C. Chagla visits SASMIRA

Shri M.C. Chagla, Union Minister for Education and Vice-President, CSIR visited Silk & Art Silk Mills' Research Association (SASMIRA) Bombay on Oct. 8, 1965. During his visit, he was taken round the laboratories where he evinced keen interest in the work being carried out. He commended the association of SASMIRA with CSIR and appreciated the work done in research, teaching students and helping industry to produce more and better the quality of goods. He had a special word of praise for the progress made by the Association in the field of man-made fibres.

RESEARCH PROGRESS

National Laboratories

NAL, BANGALORE

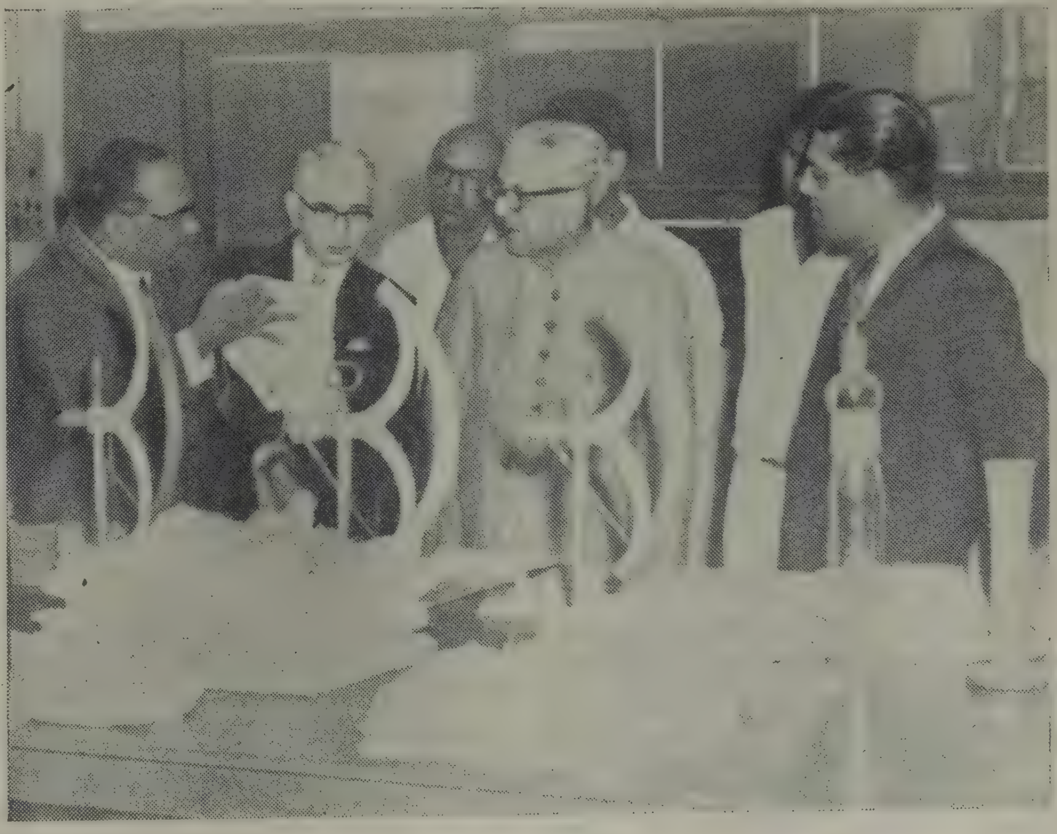
Vortex Flows—In Aeronautics, vortices play an important part in the flight and stability of aircraft. Hence, investigations on swirling flows in the NAL Vortex Tunnel at 15° vane angle were undertaken. Measurements of velocity and flow direction were made at different stations in the vortex flow. Radial wall static pressure distributions were also measured. Closed recirculation and flow reversal were observed towards the downstream end of the duct near to the wall, accompanied by high tangential velocities and zero or negative axial velocities. It was also observed that increasing the vane incidence moved upstream the reversal of flow region.

The boundary layer growth, i.e. the distance from the wall where there was no change in the total pressure reading in the claw probe, was measured. The increase in the growth of boundary layers agreed experimentally with the increasing axial velocities in the downstream direction.

CGCRI, CALCUTTA

Phase Transformations in Natural Beryl—High temperature investigations were carried out on a natural beryl sample with a view to studying the melting behaviour of the mineral. It was observed that beryl melted incongruently to a mixture of chrysoberyl, phenacite and liquid above 1507°C. Chrysoberyl was the primary phase and complete melting took place at 1627±2°C. Both chrysoberyl and phenacite

(Contd on p. 4, col. 1)



SASMIRA, Bombay—Shri M.C. Chagla, Union Education Minister and Vice-President, CSIR (third from left) examining the body armour cloth developed by SASMIRA. Others in the picture are, from left to right, Sarvashri J. G. Parikh, Executive Director, Shantilal M. Mehta, President and G. R. Podar, Vice-President of the Association.

BRIEFS

Seminar on 'Modular Coordination'

A seminar on 'Modular Coordination' was organised at CBRI, Roorkee on Oct. 8, 1965 under the Chairmanship of Lt-Gen. H. Williams, Consultant (Construction) Planning Commission. Over 200 scientists and engineers including those of CBRI and the Structural Engineering Research Centre, Indian Standards Institution, New Delhi, and University of Roorkee, Roorkee attended the seminar. The discussions were focussed on the need for adopting modular coordination in the building industry in India.

Proceedings containing the papers and discussions of the seminar are available from the Central Building Research Institute, Roorkee.

Raniganj Coal Survey Station

The Annual Meeting of the Regional Coal Survey Advisory Committee of the Raniganj Coalfield was held on Sept. 27, 1965. Four reports recording important and useful information on the coal seams of the region, based on physical and chemical survey which would enable planning the utilisation of the coals on rational and scientific basis, were presented. In addition to quality survey of various other coals, the development of a new method for the quick equilibration of coal when put under the controlled humidity conditions for moisture estimation was reported to be an outstanding contribution to the industry. It was noted that the qualities of coals from the Dishergarh seams in the virgin areas in Dishergarh Block 'A' and 'C' near Asansol are such that they would substantially add to the availability of blendable type of semi-coking coals for the steel industry in India.

NAL, Bangalore

The switching-on ceremony of Electrical Sub-station (11 kV., 1000 kW.) at the main laboratory building at Kodihalli, Bangalore was performed by Shri S.A. Quadar, Member-Secretary, Southern Regional Electricity Board on Oct. 1, 1965. Consequently, the workshop, stores, library, publications and printing sections, hitherto functioning at the temporary premises in the city, have been shifted to the main building.

NGRI, Hyderabad

The members of staff of the National Geophysical Research Institute, Hyderabad met on Sept. 22, 1965 to consider how best the Institute could play its role in the defence and economic development of the country in view of the grave National Emergency. It was decided that projects having a bearing on defence and economic development of the country should be given high priority and all possible economies should be effected in the activities of the Institute. The staff voluntarily agreed to contribute one day's pay to the National Defence Fund.

CLRI, Madras

The Banaras Hindu University has recognised CLRI, Madras as a centre for research work leading to the award of Ph.D. degree in the subjects, Physics, Entomology and Mycology.

Survey Report No. 5, SPSR Unit, New Delhi

Research Efforts in Industrial Establishments in India—This is a survey report, fifth in series, brought out by the Unit (authors : S.H.M. Husaini, A. Ghoshal & A. Rahman) with a view to estimating the research efforts in industrial establishments and also assessing the contribution of research towards the growth of production. The report in its 42 pages covers 25 major establishments in India including chemicals, drugs and pharmaceuticals, antibiotics, dyes and dye-intermediates, paints and varnishes, chemical fertilizers, rubber, iron and steel, cement and lignite, engineering and machinery. The assessment of research efforts has been made in terms of the number of research personnel—scientists and engineers—employed and expenditure on research and that of achievements in terms of papers published, patents taken, technical reports made and new schemes developed. The information covering the period 1955-63 has been analysed and presented in the form of 17 statistical tables and 8 illustrative diagrams.

RRL, Hyderabad Annual Report 1964-65

The Annual Report of Regional Research Laboratory, Hyderabad for the year 1964-65 has been published. Beginning with an introduction highlighting the multiphasic activities of the laboratory, the report (pp. xvii+103) summarises the research work carried out during the year under the following subject heads : Oils and Fats; Surface Coatings; Drugs and Pharmaceuticals; Hand made paper and Cellulose; Entomology; Biochemistry; Coal; Heavy chemicals and Fertilizers; Ceramics; X-ray Crystallography; Chemical Engineering; General Engineering; Operational Research, Technical Information and Liaison; and Instrumentation. Besides, information regarding training abroad, deputation, fellowships, international aid, etc. has been included. The appendices include among others the lists of research publications (52), patents (16), colloquia, staff, and salient features of the Budget for the year 1964-65.

A Key for the Determination of the More Common Planktonic Copepoda of Indian Coastal Waters

This book brought out by the Indian National Committee on Oceanic Research as Publication No. 2 (author : L.R. Kasturirangan), is a handy manual for ready identification of the common species of Copepods occurring in marine planktons of Indian waters. The publication, meant mainly for the use of non-specialists in the group Copepoda, covers a selection of ninetynine common species treated in a linear order. The morphological characters of sexually mature individuals only have been taken up for the differentiation of species. The general form of the body and the fifth pair of legs which is invariably sufficient to guide the correct determination of the characters has been included in almost all the figures given in favour of illustration.

A Bibliography of Plankton of the Indian Ocean

The Indian National Committee on Oceanic Research has brought out a bibliography of plankton of the Indian Ocean as publication

No. 3. The references have been arranged subjectwise. The bibliography has been compiled by Shri R. Raghu Prasad of Central Marine Fisheries Research Substation, Ernakulam and edited by Dr N.K. Panikkar, Director, Indian Ocean Expedition, New Delhi.

Collaboration with Universities and other Institutes

Dr S.L. Sarkar, Head of the Department of Pharmacology, M.G.M. Medical College, Jamshedpur joined CDRI, Lucknow for one month's training in 'Action of hormones on the Central Nervous System', under an ICMR short-term visiting fellowship.

Dr M. Subba Rao, Research Fellow, Osmania Medical College, Hyderabad joined CDRI, Lucknow for a short training in 'Amoebiasis'.

Shri V.M. Lal Srivastava, Eye Hospital, Sitapur joined CDRI, Lucknow for a short training in 'Biochemistry Techniques'.

Shri N.K.D. Choudhuri, Scientist, CBRI, Roorkee visited the National Design Institute, Ahmedabad to help in the Acoustic design of their workshop and auditorium.

Dr Joseph George, Scientist, CBRI, Roorkee visited the Forest Research Institute, Dehra Dun and discussed with the Officer-in-charge, Composite Wood Branch the details regarding the collaborative project on 'Painting characteristics of Indian timbers'.

Visitors

Dr E. Hoffmann of the CSIRO, Australia visited CBRI, Roorkee on Sept. 3, 1965.

Dr Myint To of Burma visited CDRI, Lucknow during Sept. 3-5, 1965 on a study tour under Colombo Plan.

Dr Paul B. Pearson, President, Nutrition Foundation Inc., New York visited CFTRI, Mysore on Sept. 11, 1965.

Emeritus Scientists

Prof. K.N. Kaul, CDRI, Lucknow Aug. 10, 1965.

Dr. L.A. Ramdas, NPL, New Delhi Oct. 13, 1965.

STAFF NEWS

Appointments

Shri Ramdas Kissendas, Pool Officer-in-charge, CSIO Service & Maintenance Unit, Madras (Sept. 1, 1965)

Dr K. Krishna Reddy, Scientist, CLRI, Madras (Sept. 4, 1965)

Shri V.N. Iyer, Scientist, NCL, Poona (Sept. 8, 1965)

Dr Soma Kumar, Pool Officer, CDRI, Lucknow (Sept. 9, 1965)

Shri S.C. Jain, Scientist, CSIO, Chandigarh (Sept. 17, 1965)

Sarvashri C. G. Shah, V. J. D'souza, V. V. Shanbag, K. S. Hebbar, K. V. Krishna Rao & A. Venkateshamurthy, Scientists, NAL, Bangalore (October 1, 1965)

Sarvashri S.S. Desai, Pool Officer, & Shri N. Murali Madhav, Scientist, NAL, Bangalore (Oct. 6&7, 1965 respectively)

Transfer

Shri Lalit Mohan, Administrative Officer, NCL, Poona—NPL, New Delhi (Sept. 20, 1965)

Retirement

Shri G. L. Tandon, Scientist, CFTRI, Mysore (Aug. 21, 1965)

Nominations

Dr Y. Nayudamma, Director, CLRI, Madras—Co-opted Member, Governing Body of the Madras Productivity Council.

Dr S.K. Barat, Scientist, CLRI, Madras — Alternate Member, Governing Body of the Madras Productivity Council, Madras.

Maj. Gen. S.S. Sokhey, Hony Adviser, CSIR—Member, Cholera Expert Group of Indian Council of Medical Research, New Delhi.

Dr J.S. Aggarwal, Scientist, RRL, Hyderabad—Representative of CSIR, Council of Indian Paint Research Association, Calcutta.

Deputations

Dr S.N. Ghatak, Scientist, CDRI, Lucknow resumed duty on Sept. 1, 1965 after completing his studies at the Institute for Microbiology and Experimental Therapy of the German Academy of Science, Jena under the Cultural Co-operation Agreement between GDR and India.

Prof. Dinesh Mohan, Director, CBRI, Roorkee participated in the 6th International Conference on Soil Mechanics and Foundation Engineering held at Montreal, Canada during Sept. 8-15, 1965. He was elected General Reporter for the session on 'Earth and Rock Dams, Slopes and Excavations'. He returned on Sept. 16, 1965.

Shri R.M. Krishnan, Scientist, NML, Jamshedpur resumed duty on Sept 23, 1965 after participating in the 32nd International Foundry Congress held at Warsaw during Sept. 12-18, 1965. He represented India in two of the International Commission on 'Foundry Alloys' and 'Metallurgy and Founding Properties', and was elected Vice-President at one of the technical sessions of the Congress. In his capacity as the Executive Secretary of the 33rd International Foundry Congress, he took part in the deliberations of the International Committee of Foundry Technical Association and presented the programme for the 33rd Congress to be held in India during December, 1966.

Dr S. L. Kapur, NCL, Poona returned from Czechoslovakia on Sept. 27, 1965 after attending the symposium on 'Chemistry of Micromolecules and Organosilicones'.

Dr Y. N. Trehan, Scientist, NML, Jamshedpur preceeded to U.K. on Sept 28, 1965 for training in 'Preparation of thin films for electron microscopy and electron diffraction studies' at the University of Strathclyde under the Colombo Plan.

Shri L. V. Kannan, Scientist, CDRI, Lucknow proceeded to Czechoslovakia on Sept 28, 1965 to attend a long term post-graduate course in 'Modern Problems in Biology' at the Czechoslovak Academy of Sciences.

Sarvashri K. N. Raju & V. Gopalakrishna, Scientists, NAL, Bangalore resumed duty on Sept. 13 & 27, 1965 respectively after completion of 13 months' training in the Langley Research Centre of the National Aeronautics and Space Administration, USA and visits to aeronautical institutions in UK and the continent under the UNSF Aid Programme.

Shri M.V.V. Murthy, Scientist, NAL, Bangalore returned on Oct. 6, 1965 after completion of advanced studies for 12 months at the Pennsylvania State University, USA under UNSF Aid Programme.

Research Progress

(Contd from p. 1, col. 3)

persisted below the reaction point of metastable phases.

The results indicate that pure melt technique would not be suitable for growing inclusion free beryl and a mixture of beryl and silica might be a suitable starting material for the growth of single crystals.

Sponsored Research

Chemical Basis of the Action of Carcinogenic Compounds in Plant Cells—Induction of malignant growth through the application of different carcinogenic compounds, N-ethylurethane, carbon tetrachloride and allylisothiocyanate, on the following plant materials was carried out: *Allium cepa*, *A. sativum* and *Haemanthus kalbreyeri*. The tumours were observed to form in N-ethylurethane after 7 days in Knop's solution. In case of carbon tetrachloride, continuous treatment (12°—14°C.) for 9 days in 0.5 per cent solution resulted in the appearance of enlarged malignant cells but no tumour was externally visible. Experiments carried out with allylisothiocyanate indicated heavy toxicity. The malignant growth was detectable under the microscope by the formation of large rounded cells with nuclei at the corner.

Further, the biochemical activities of tumours in the tissues treated with N-ethylurethane and carbon terachloride were studied. Results from the N-ethylurethane treated tissues indicated no significant decrease of deoxyribonucleic acid in malignant cells as compared to normal nuclei. No significant difference in respect of ribonucleic acid reaction was observed. Malignant cells revealed heavy concentrations of alkaline phosphatase and similarly strong precipitation in dividing nuclei was observed in comparison to metabolic ones. With regard to amino acids, malignant cells showed heavy activity of arginine. Tumours obtained by carbon tetrachloride treatment showed some fundamental differences from those obtained by N-ethylurethane. Ribonucleic acid content was found to be heavy in contrast to its content in normal dividing nuclei. Deoxyribonucleic acid ratio between normal and malignant cells did not show any significant difference. Concentration of both acid and alkaline phosphatases was rich in malignant cells. Metabolic nuclei showed difference in size, and amount of phosphatase was found to be inversely proportional to the size. With regard to arginine reactivity in malignant cells, no consistent results have been observed. With some fixations in tumours induced by carbon tetrachloride, it was observed that the arginine content in malignant cells did not differ heavily from the normal cells—Dr A. K. Sharma, Calcutta University, Calcutta.

CBRI Process

Cement Paints—New formulations for the manufacture of cement paints suitable for the use of tropical climates have been evolved. The cement paints developed are free from the chief drawback, i.e. the poor service life, and are capable of giving good performance even after two years of outdoor exposure. The paint hardens quickly and gives a pleasing mat finish. It is highly water repellant and resistant to organic disfiguring growth.

The process of manufacturing the paint is simple and based on indigenously available raw materials. The capital investment and the working capital for a plant producing 2 tons of paint per day is estimated at Rs 18,000 and Rs 1,32,563 respectively. The cost of production works out to be Rs 1,328 per tonne.

Parties interested in commercial exploitation of the process may correspond with the Executive Director, National Research Development Corporation of India, Mandi House, Lytton Road, New Delhi-1.

PATENTS

Filed

100488: *Improvements in or relating to mechanical strength and resistance of glass or glass-crustal composites to thermal shock and chemical attack of vapours, liquids and solids*—S. Kumar & P.K. Gupta, CGCRI, Calcutta.

100489: *Friction prop.*—N. C. Saxena & B. Singh, CMRS, Dhanbad.

101161: *Process for the preparation of day-light and pink-light emitting electroluminescent phosphors*—D. S. Ambardekar & A. B. Biswas, NCL, Poona.

USA

457299: *Processing of textiles for imparting simultaneously improved tear resistance and abrasion resistance*—V.B. Chipalkatti, R.M. Desai, N.B. Sattur & I. Hussain, SRIFIR, Delhi.

Accepted

90112: *A method for the preparation of anion exchange resins*—J.N. Bhaumik, P.N. Mukherjee, S.K. Mallick & A. Lahiri, CFRI, Jealgora.

90469: *Method for processing of raw mammalian intestines into dry ready to wet intestines suitable for use as surgical suture, sausage casings, sports guts or the like*—S.K. Barat, CLRI Madras.

Sealed

85788: *A process for the preparation of a catalyst for the manufacture of maleic anhydride*—R.T. Thampy, S. K. Bhatnagar & B.S. Trehan, SRIFIR, Delhi.

87435: *Dyeing of wool, hair, and other keratinous fibres into a fast non-bleeding jet black shade*—S.K. Barat, CLRI, Madras.

NEW PUBLICATIONS

A Key for the Identification of the More Common Planktonic Copepoda of Indian Coastal Waters

L.R. Kasturirangan

Contains description of ninety-nine common species of marine Copepods along with a keywork for their easy identification

Pp. 87 ; Royal 8vo — Price Rs 7.00 ($ 2 or 14 s.)

A Bibliography of Plankton of the Indian Ocean

R. Raghu Prasad

An up-to-date and subjectwise account of research publications relating to plankton of the Indian Ocean

Pp. 86; Royal 8vo — Price Rs 4.00 ($ 1 or 6 s.)

Copies available from :

Sales & Distribution Officer,
Publications & Information Directorate, CSIR, Hillside Road, New Delhi-12

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CSIR NEWS

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FOOD TECHNOLOGIC
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MYSORE

Industrial Toxicology Research Centre at Lucknow

An Industrial Toxicology Research Centre has been set up at CDRI, Lucknow. Dr S.H. Zaidi, Director, IIBEM, Calcutta has been appointed on transfer as the Director of the Centre. The Centre will be autonomous in pursuing its research and development programmes under the Director. The minimum scientific and technical staff which can be easily spared by CDRI will be transferred to the Centre, and any facilities in addition to library service, animal house and workshop required for the proper functioning of the Centre, will also be provided by the Institute.

DG's Foreign Tour

Dr S. Husain Zaheer, Director-General of Scientific & Industrial Research, left New Delhi on Oct. 26, 1965 for proceeding to U.K., East Germany and Hungary. In U.K. Dr Zaheer would attend the Meeting of the Working Group of International Council of Scientific Union and discuss with Sir Andrew Cohen, Secretary, Ministry of Overseas Development, financial assistance for specialised scientific equipments for CSIR from U.K. Dr Zaheer would also be visiting East Berlin and Budapest at the invitations of GDR Academy of Science and Hungarian Academy of Science respectively.

Defence Effort at CDRI

In view of the present defence requirements of serum albumin and gamma-globulin, the production capacity of plasma fractionation unit at CDRI, Lucknow has been stepped up to handle 7.5 litres of blood per batch. A total of 40 litres of blood have been processed. Besides, the staff of the Institute have voluntarily donated blood and money.

RESEARCH PROGRESS

National Laboratories

CMRS, DHANBAD

Studies on Roof Movements in Mines—An understanding of roof movements is a prerequisite for the introduction of new methods of mining from the point of view of safety. For such a study, the well-known Maihak electronic remote measuring bore hole and convergence transmitters were employed in an Indian mine for the first time to measure accurately the strata deformation. The instruments were placed in the vicinity of a depillaring area in a shallow mine in the Jharia coalfield. Useful data and experience have been obtained through these studies. It is found that a stook which acts as a support at the commencement of depillaring, looses its identity as support when a quarter or more of it is extracted. At this stage a sudden roof movement is observed and the roof subsequently settles. These observations are being confirmed through further extensive studies in different mines and seams.

Preliminary results obtained in the trial studies along with the pertinent observations on them have been reported in a CMRS release No. CMRS-E2/17. The data throw light on the settlement of roof in the mine in relation to working at different places from the face, and are highly valuable as they provide prior information on the probable instant of roof fall and collapse.

Sponsored Research

Portable Instrument for Measuring Soil Moisture—Of the conventional methods employed for determining the soil moisture, the one which utilizes the relationship between soil moisture and the electrical resistance of the soil is most commonly used. In this method, a block of plaster of Paris in which two electrodes are set is buried in the soil. The plaster of Paris, an absorbent material, becomes essentially a part of the soil and therefore responds to the changes in the moisture content. This method has the drawback that the plaster of Paris is not sensitive at higher moisture content. Certain side processes such as polarisation, electrolysis, stray currents also develop when electric current is passed through the soil unit. In order to overcome these drawbacks and at the same time design a portable instrument, a project was undertaken.

Plaster of Paris combined with fibre glass was used as a moisture-sensitive element in the soil unit and it was found to be quite sensitive through the whole range from saturation to wilting point. Concentric electrodes were used instead of parallel type of electrodes so as to reduce the effect of stray currents. Alternating current of frequency 1000 c/s. was used to reduce the polarisation and electrolysis in the soil unit. An alternating current meter consisting of transistors and miniature components was used to measure the resistance of the moisture-sensitive element. The oscillator of the meter was powered by two 4.5 V. dry batteries. A sensitive micrometer and a potentiometer were included in the meter circuit and compensation for the ambient temperature and correction for the battery voltage was obtained by turning the knob of the potentiometer. In order to determine the temperature of the soil, a thermistor was introduced inside the soil unit.

The instrument can measure resistances in the range, 50-10000 ohms which is sufficient for the

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BRIEFS

CDRI Annual Report 1963-64

The Annual Report of CDRI, Lucknow for the year 1963-64 has been published. The report (pp.v+83), summarising the main activities of the Institute under the Introduction, includes: a project-wise record of research giving the objectives, previous work and a detailed account of progress made during the year; salient features of the miscellaneous studies; information on other activities such as technical information, documentation, technical aid to outside organisations, collaboration with universities and other scientific institutions, seminars, visitors, awards, international aid and deputations. The appendices include lists of publications, patents, membership of Executive Council, staff and a brief outline of the budget for the year 1963-64.

Scientific Research in Indian Universities : Survey Report No. 6

A survey of scientific research in various departments of Indian universities has been attempted by the Survey and Planning of Scientific Research Unit of CSIR. The preliminary findings have been published as Survey Report No. 6 of the Survey and Planning of Scientific Researh Unit. The data for the survey have been taken from annual reports of the universities. Of the 48 universities which have scientific departments, only nine furnished reports for all the years 1952-1962. Some universities sent reports only of a few years, and new universities did not send their reports. Consequently, the data collected from only 25 universities have been included in the survey report. The research activities as judged by published papers of these universities have been analysed subject-wise in respect of twelve subjects in terms of total number of papers published each year, their distribution according to important fields of research, and category of journals in which they are published. This analysis has proved useful in indicating the field of specialization of a particular university and the general research trends in universities. The data are presented in an appendix consisting of as many as 94 statistical tables. The important tentative conclusions of the survey are the following:

1. Research in universities is limited to what can be termed as classical branches of science and is further confined to a few areas.
2. By and large only individual scientists have endeavoured to do research work and wherever there is collaboration, it is between a member of research staff and head of the department. There is not much evidence for collaboration between university staff and outside research institutions.
3. Study of the list of research workers compiled indicates that only a few members of the staff of universities are interested in research.

Shri M.C. Chagla visits CSIO

Shri M.C. Chagla, Union Minister for Education and Vice-President, CSIR visited the Central Scientific Instruments Organisation, Chandigarh on October 29, 1965. He went round the various sections of the Organisation and showed keen interest in the optical components and the transistorised electronic instruments designed and developed in the Organisation. He also visited the Indo-Swiss Training Centre, Chandigarh.

CSIR Aid to Railways

CSIR laboratories have been rendering technical aid and advice to Railways in regard to solution of engineering problems, development of substitute metal products, indigenous components for batteries and other equipment, protective coatings for metals, etc. In view of the urgency of the problems pertaining to this major public undertaking, the efforts have been considerably stepped up. Most of these are aimed at import elimination and indigenous production.

The projects in which collaboration has been made include among others aluminium base bearing alloys, antifriction materials, contact springs, corrosion resistant rail, electroplating of ejector cones to improve their life, red signal glasses for railway signals, silver/carbon and metal/metal electrical contacts, porous carbon element for air depolarised cells, sac element for Leclanche cells, nickel cadmium cells, and anticorrosive paints. On

CSIO, Chandigarh—Shri M.C. Chagla, Union Education Minister & Vice-President, CSIR (*fifth from right*) being shown some of the transistorized electronic instrument, developed at the Organization. Third from left is Dr P.S. Gill, the Director.

the engineering side, work has been completed on foundation and soil stabilisation for rail and bridge construction, metal arc welding technique, testing of oil filters, etc.

Improvements have been made in the design of a transition type centre buffer coupler, and that of a snubber for BOBS wagons used for ore movement enabling improved riding and higher speed of rolling stock. Studies on the problem of adhesion between rail and wheel are in progress.

STAFF NEWS

Appointments

Shri A.C. Sarna, Scientist, CRRI, New Delhi (Sept. 9, 1965)

Sarvashri S. K. Banerjee (Aug. 12, 1965), S.K. Ghosh (Aug. 26, '65) N. Appa Rao & V. Gurunathan (Sept. 17, 1965), R. Ramachandran & P.K. Das (Sept. 18, 1965), P.K. Dey & C. Juneja (Sept. 30, 1965), M.K. Mani (Oct. 6, 1965), K.S. Sankaran, K. Nagaraja Rao & T. Singh (Oct. 8, 1965) T.K. Santharam, R. Ramchandra, G.S. Rihal & G.J. Guru Raja (Oct. 11, 1965), R.G. Bhuvaneswaran & P.K. George (Oct. 12, 1965), T.N. Ranganathan (Oct. 13, 1965), Scientists, CMERI, Durgapur.

Saravashri Mohammad Habibulla & M.P. Mulla, Pool Officers, CFTRI, Mysore (Sept. 27, & Oct. 14, 1965 respectively).

Resignations

Dr B.K. Bhattacharya, Scientist, CDRI, Lucknow (Oct. 6, 1965)

Dr D.S. Bhatia, Scientist, CFTRI, Mysore (Oct. 8, 1965)

Nominations

Dr G.S. Sidhu, Director, RRL, Hyderabad — Member, Advisory Committee to the Technical Cell of the Directorate of Industries and Commerce, Government of Andhra Pradesh.

Prof. S.R. Mehra, Director, CRRI, New Delhi—Member, Managing Committee of the Indian National Group of the International Association for Bridge and Structural Engineering for the year 1966.

Dr M.S. Iyengar, Director, RRL, Jorhat—Member, Planning Advisory Council, Planning and Development Department, Government of Assam, and State Development Council, Nagaland.

Dr Hari Narain, Director, NGRI, Hyderabad—Member, Committee to be set up by the Ministry of Irrigation and Power to examine the possibility of generation of power by developing the hot springs in north-western Himalayas.

Dr N.K. Panikkar, Director, IOE, New Delhi—Member, Physical Science Group, Pan Indian Ocean Science Association.

Shri W.N. Pandav, Scientist-in-charge, CLRI Regional Extension Centre, Bombay—Member, Panel for Leather Industries, Maharashtra Small Scale Industries Development Corporation Ltd, Bombay.

Shri D.P. Sen Gupta, Scientist, CBRI, Roorkee—Convener, Sub-Committee on Soil Mechanics formed by the Institution of Engineers (Bengal Centre)

Shri L.C. Jain, Scientist, CBRI, Roorkee—Member, Brick and Tile Industry Study Panel of National Buildings Organisation.

Dr Mohan Rai, Scientist, CBRI, Roorkee—Member, Lime Industry Study Panel of National Buildings Organisation.

Dr Y. Venkatesham, Scientist, CDE Unit, CSIR Secretariat, New Delhi—Member, Industrial Productivity Council for Fertilizer Industry, National Productivity Council, New Delhi.

Dr S. Ramachandra, Scientist, CMRS, Dhanbad—Member, Panel for Applied Mechanics (Fluids), Institution of Engineers (India).

Dr H.L. Uppal, Scientist, CRRI, New Delhi—Secretary, Central Assessment Committee, Government of India.

ISI Nominations

Dr S.K. Chopra, Scientist, CBRI, Roorkee—Member, Committees on (i) Cement and Concrete; (ii) Concrete; and Cement and Concrete Research Panel

Dr S.M.K. Chetty, Scientist, CBRI, Roorkee—Member, Committees on; (i) Construction; (ii) Precasting and Prefabrication; (iii) Criteria for Design of Structures; (iv) Earthquake Engineering ; and (v) Concrete Reinforcement

Shri M.H. Pandya, Scientist, CBRI, Roorkee—Member, Committee on Modular Coordination.

Shri D.V. Sikka, Scientist, CBRI, Roorkee—Member, Committee on Bridges.

Shri H.P.S. Murthy, Scientist, NML, Jamshedpur—Member, Sectional Committees on : (i) Refractories, (ii) Refractories Investigation and (iii) Graphite Crucibles.

Shri S.C. Jain, Scientist, CSIO, Chandigarh—Member, Engineering Standards Sectional Committee.

Dr J. Prasad, Scientist, CSIO, Chandigarh—Member, Materials and Components for Instruments Sub-Committee.

Deputations

Dr M.M. Vohra, Scientist, CDRI, Lucknow proceeded to Canada on Oct. 20, 1965 for advanced studies under the Post-Doctoral Fellowship offered by the National Research Council, Canada.

Shri M.S. Keshav, Scientist, CMERI, Durgapur resumed duty on Oct. 13, 1965 after completion of advanced studies in Automobile Engineering at the Advanced Scheme of Automobile Engineering, Cranefield, England for one year under U.N. Special Fund Fellowship Scheme.

Honours & Awards

Dr P. K. K. Nair, Scientist, NBG, Lucknow has been invited to act as Vice-chairman of the 2nd International Conference on Palynology, to be held at Utrecht, Netherlands during Aug. 1966.

Dr D.C. Roy, Officer-in-charge, Indian Plywood Industries Research Association's Field Station, Calcutta has been elected a fellow of the Royal Institute of Chemistry.

Shri M. Hasan, Photographer, RRL, Hyderabad has been awarded the honour of 'Artiste' by the Federation Internationale de P'Arte Photogrophique, France. He has been also awarded the title of 'Honours Personality of the Year' by the Federation of Indian Photography.

Smt. Salma Jaleel, RRL, Hyderabad—Ph.D. (Osmania University); thesis : *Beta-phenylethylamine derivatives of potential pharmacological interest.*

Research Progress

(Contd from p. 1, col. 3)

measurement of soil moisture from saturation to well below the wilting point. Information about the available water percentage for plants and the time favourable for irrigating the field can be easily obtained from the meter readings. The instrument is of considerable use to farmers and agronomists—M. Salaruddin, Central Agri-Meteorological Observatory, Poona.

Central Design & Engineering Unit
Based on the laboratory data obtained at CLRI, Madras, the Central Design & Engineering Unit, has undertaken the engineering and design work for a semi-commercial plant to produce 250 tonnes per annum of synthetic tanning agents, called Syntans, used in the tanning industry. Preparation of layout, detailed engineering designs and drawing up of specifications of equipment including auxiliary units have been completed. The Unit is also assisting the Institute in procuring the equipment and auxiliary items required for the project. The equipment will be fabricated and procured within the country, thus obviating the necessity of imports.

Research Papers

AMARJIT SINGH & DEWAN, H.S. (CEERI, Pilani)—Dielectric tube waveguides for beam plasma interaction. *Proc. Fifth int. Conf. Microwave Tubes, Paris* (Academic Press, New York), (1964), 460.

AGARWAL, K.L. & DHAR, M.M. (CDRI, Lucknow)—The use of 2, 3'-anhydro nucleosides in the synthesis of the internucleotide bond. *Tetrahedron Lett.*, No. 29 (1965), 2451.

VOHRA, M.M., PRADHAN, S.N., JAIN, P.C., CHATTERJEE, S.K. & NITYA NAND (CDRI, Lucknow)—Synthesis and structure-activity relationships of some aminopyridines, imidazopyridines, and triazolopyridines. *J. med. Chem.*, **8** (1965), 296.

GUPTA, B. & KUNDU, B.C. (CDRI, Lucknow)—Determination of average vein-islet, veinlet termination and stomatal numbers of a leaf. *Planta Mediea*, **13** (2) (1965), 247.

PRASAD, J. (CGCRI, Calcutta)—Effect of some physical factors on the differential thermal analysis of kaolinite. *Clay Sci., Japan*, **2** (2) (1964), 32.

PATENTS

Filed

101626: *Improvement in or relating to soft ferrites*—C.V. Ganapathy, S.C. Gupta, G. Govindaswamy, K. Narayanan & T.V. Ramamurti, NPL, New Delhi.

101627: *A process for the isolation of a blood sugar lowering principle from the seeds of* Eugenia jambolana—M.R.R. Rao & V.M. Gandhi, Department of Chemical Technology, Bombay University, Bombay.

101628: *Detinning of tin scraps in inhibitor impregnated acid medium*—N. Venkatakrishnan, R.L. Seth & P.B. Mathur, CECRI, Karaikudi.

101629: *Direct indicating mechanical load cell*—Bhagwant Singh, CMRS, Dhanbad.

101630: *A process for the production of pure aromatics such as benzene, toluene, xylenes, naphthalene, etc. from pure and mixed alkylaromatic feeds with or without saturates*—K.K. Bhattacharyya, P. Desikan & L.C. Jain, IIP, Dehra Dun.

101712: *Improvements in or relating to recovery of zinc from by-product zinc oxide/hydroxide/carbonate from hydrosulphite and other chemical industries and by-product zinc oxide from paint and galvanizing industry by the direct reduction technique*—H.V. Udupa & P.V.R. Vasudeva Rao, CECRI, Karaikudi.

101713: *Synthesis of substituted 2, 3-diphenylbenzofurans as antifertility agents*—P.K. Grover, H.P.S. Chawla, Nitya Anand, V.P. Kamboj & A.B. Kar, CDRI, Lucknow.

101714: *Particle boards from wood waste without binder*—T.C. Saikia & M.S. Iyengar, RRL, Jorhat, Assam.

101715: *Electrical load cell with curved surface*—Bhagwant Singh, CMRS, Dhanbad.

101716: *Mechanical roof bolt load cell*—Bhagwant Singh, CMRS, Dhanbad.

101717: *Compression ring load cell*—Bhagwant Singh, CMRS, Dhanbad.

101836: *(3,4-Disubstituted phenyl) lower alkylaminopyridines and intermediates obtained in the synthesis thereof*—P.C. Jain, S.K. Chatterjee, & Nitya Anand, CDRI, Lucknow.

101837: *Substituted piperazines and intermediates obtained in the synthesis thereof*—P.C. Jain & Nitya Anand, CDRI, Lucknow.

U.S.A.

475240: *Preparation of synthetic wax esters*—A.J. Pantulu, K.T. Achaya, G.S. Sidhu & S.H. Zaheer, RRL, Hyderabad.

475266: *Process for treating cellulosic textile material for improving simultaneously its crease recovery and its abrasion and tear resistance properties*—V.B. Chipalkatti, R.M. Desai, N.B. Sattur & Iftikhar Hussain, SRIFIR, New Delhi.

Japan

45151/65; *Preparation of porous carbon electrode using vegetable carbon for use in air depolarised cells*—A.K. Abdul Waheed, K.V.N. Rao & K.S.G. Doss, CECRI, Karakudi.

Accepted

90058: *Improvements in or relating to focussing devices for projection lamps in paraboloidal or like shaped reflectors*—B.M. Bishui & Jagdish Prasad, CGCRI, Calcutta.

91290: *Improvements in or relating to an apparatus for the measurment of gel time of thermosetting resins* — Akshayabat Pande, M. Krishnan & S.K. Bhatnagar, SRIFIR, Delhi.

Sealed

85446: *Preparation of carboxylic cation-exchange materials* — N.R. Krishnaswamy, V.K.K. Indusekhar & B.D. Dasare, NCL, Poona.

86823: *A new process for the production of nitrogenous fertilizers and soil conditioner from coal, lignite and peat*—P.N. Mukherjee, J.N. Bhaumik & A. Lahiri, CFRI, Jealgora.

87435: *Dyeing of wool, hair, and other keratinous fibres into a fast non-bleeding jet black shade*—S.K. Barat, CLRI, Madras.

France

1408076: *A process for the disproportionation of alkyl benzene*—G.S. Bhargava, P. Duhaut, G. Follain, M. Lal & N. Ray, IIP, Dehra Dun.

Printed and published by Shri S. A. Chari, Editor, Publications & Information Directorate (CSIR), Delhi-12, at Asia Press, Delhi-6.

R.N. 4212/5

CSIR NEWS

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LIBR

DG's Discussions abroad

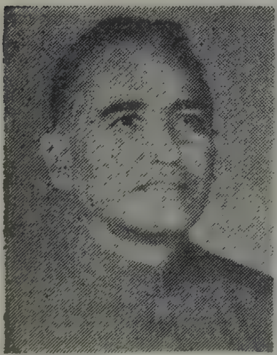
Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, returned to New Delhi on Nov. 15, 1965 from his tour of U.K., the German Democratic Republic and Hungary (*CSIR News*, Vol. 15, No. 21, *p*. 1).

Dr Zaheer attended the meeting of the Sub-Committee of the International Council of Scientific Unions for application of science and technology in developing countries. He also had detailed discussions with the U.K. Ministry of Overseas Development on programmes of assistance to CSIR in the scientific field. Dr Zaheer expressed hopes for favourable outcome of his talks.

Dr Zaheer held discussions with the Hungarian Institute of Cultural Relations in regard to scientific and technical collaborations. He also discussed details of obtaining scientific equipment and instruments from these countries in view of India's present foreign exchange difficulties. He found that East Germany, which already supplies scientific equipment to India, is willing to enlarge this sphere of collaboration.

Dr L.B. Singh

Dr Lal Behari Singh, Joint Director (Horticulture), Ministry of Food & Agriculture, New Delhi took charge as Director of the National Botanic Gardens, Lucknow with effect from Aug. 10, 1965.



Dr Singh (*b*. June 1, 1921 at Purelal Shah), had his early education in Sultanpur District. After graduating in Agriculture from the Agra University in 1943, he

(Contd on p. 4, col. 2)

RESEARCH PROGRESS

National Laboratories

CSMCRI, BHAVNAGAR

Potassium Sulphate Manufacture in Little Rann of Kutch—A process has been developed for the manufacture of potassium sulphate based on the utilization of bitterns from salt works in the Little Rann of Kutch. Analysis of a large number of samples revealed that while some of the bitterns are practically free from magnesium sulphate, others are not. Two varieties of mixed salts which could be very suitably used for manufacture of potassium sulphate have been produced by solar evaporation of the bitterns. The process has been fully worked out on a pilot plant of capacity 1 ton potassium sulphate per day. The present potential for potassium sulphate manufacture in this area exceeds 6000 tons per year which would result in foreign exchange saving worth Rs 27 lakhs every year.

NML, JAMSHEDPUR

Recovery of Zinc from Zinc Dross—India's total demand of zinc has so far been met entirely by imports and about half of this quantity is consumed by the galvanising industry. Studies were taken up for recovering the zinc metal from galvaniser's dross, a waste product

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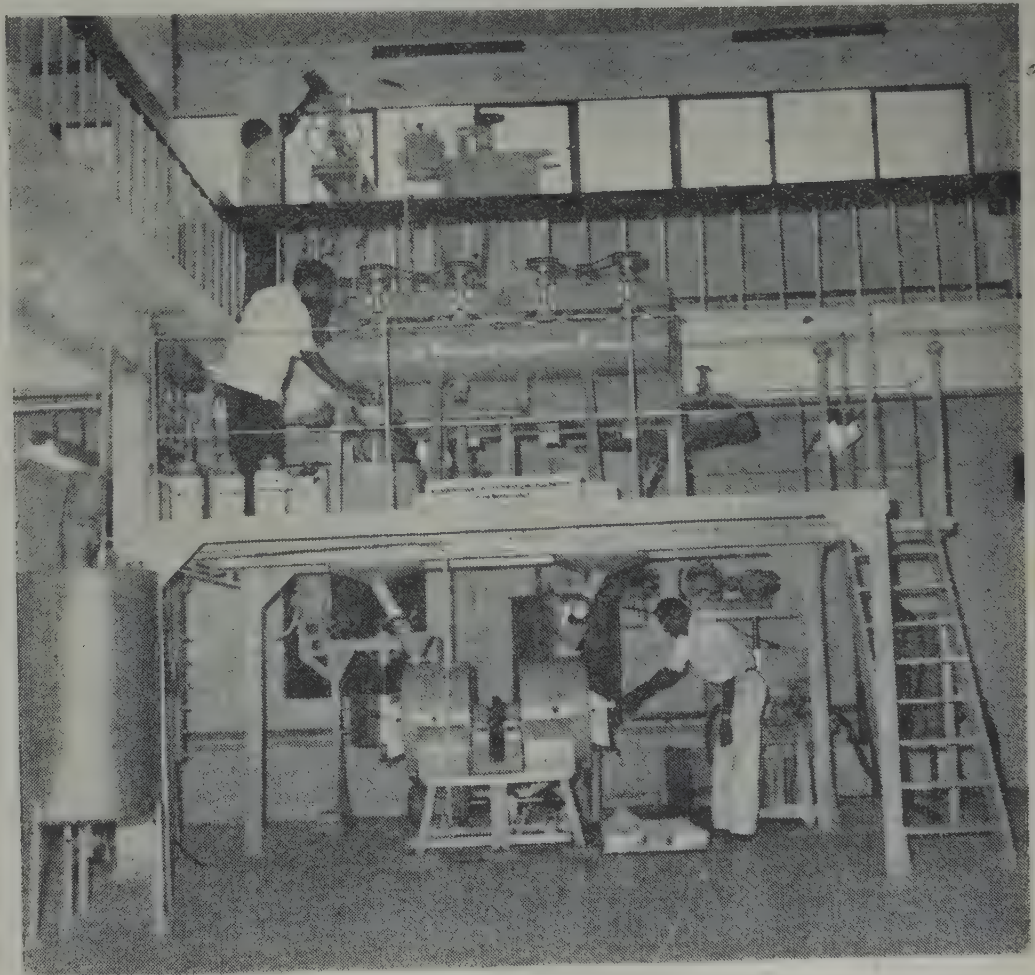


CSMCRI, Bhavnagar—Pilot plant for manufacture of potassium sulphate from mixed salt

BRIEFS

Meeting

A meeting of the Editorial Committee of the Illustrated Catalogue of Medicinal Plants of India will be held at Krishi Bhavan, New Delhi on Dec. 10, 1965. Dr M.S. Randhawa will preside.

Get-together of 'Research & Industry'

The Council of Scientific and Industrial Research will be organising a conference of scientists and representatives from industry during Dec. 20-21, 1965 in New Delhi. The opening session will be presided over by Shri M.C. Chagla, Union Minister for Education and Vice-President, CSIR. The main objective of the conference would be to more specifically outline the work required to be carried out by the Research Institutes and the Research & Development Establishments of the industries themselves to attain maximum self-sufficiency. It would also delineate areas in industry where indigenous know-how is adequate or needs to be supplemented, or where foreign collaboration is essential for speedy industrial development. The discussions will embrace areas concerned with import substitution, export promotion, defence requirements, food, agriculture and forestry and industrial promotion and development. In each field research and development would deal with (i) raw materials, (ii) components (iii) process and product technology. Indigenous know-how and substitution can cover any one of these areas.

The proceedings of the conference will be divided into fifteen Working Groups which will be meeting in two sessions on Dec. 20 and 21 followed by a final session to consider and finalise the recommendations of the Working Groups. The Conference is expected to be attended by representatives of trade and industrial organisations, various Ministries and Departments of Government of India, Research & Development organisations of the Ministries of Railways, Defence and Atomic Energy, the Indian Council of Agricultural Research, Indian Council of Medical Research and a large number of research and technical institutions.

Joint Convention of Indian Chemical Society and Chemical Research Committee

A Joint Convention of the Indian Chemical Society and the Chemical Research Committee of CSIR will be held during Dec. 25-29, 1965 at Aligarh with the object of providing an opportunity for exchange of views among the chemists all over the country. Shri M.C. Chagla, Union Minister of Education and the Vice-President, CSIR, has been requested to inaugurate the Convention. Papers will be presented in four simultaneous sectional meetings: Physical, Inorganic and Analytical Chemistry; Organic Chemistry; Biochemistry; and Chemical Engineering & Industrial Chemistry. About 500 delegates all over the country are expected to participate.

In view of the present emergency it has also been decided to organise a symposium on 'The Role of Chemists in Achieving National Self-Sufficiency'. Eminent scientists have been invited to give lectures on the following topics: Re-orientation of research to project-orientated applied research; Defence; Drugs; Organic Chemicals and Intermediates; and Agro-Chemicals.

CMRS Open Days

The Central Mining Research Station, Dhanbad is organizing Open Days on Dec, 5 & 12, 1965. All the laboratories of the Station will be open on both these days from 10 a.m. to 5 p.m. and research scientists and other staff will be on duty to explain to the visitors the activities of the Station. Besides the research and testing facilities being exhibited, technical films on mining will be shown.

Technical Information Centre for Chemical Industries

A Technical Information Centre for Chemical Industry has been set up jointly by CSIR and the Indian Chemical Manufacturers' Association, at Bombay, to act as an intermediary between the national laboratories and chemical and allied industries in regard to the supply of technical information. The other activities of the Centre include regular visits to industrial units, identification of their problems through a detailed discussion with industrialists and their technical staff, referring their problems for solution to the various national laboratories, compilation of statistical data pertaining to import, export, indigenous production, installed capacity, number of units in operation, etc. for different chemical products as well as preparation of indexes and abstracts of valuable articles and news items from various scientific and technological periodicals concerning chemical industry.

Industrialists may contact the Scientist-in-charge of the Centre at 7, Bruce Street (Second Floor), Fort, Bombay-1 in connection with their technical problems

The Wealth of India Industrial Products : Part VI

This is the latest addition to the Wealth of India series, an encyclopaedic publication of the raw materials and industrial products, brought out by the Publications & Information Directorate of CSIR. The volume covering the letters M, N, O and P (up to Pi) contains articles dealing with 28 industries of which the most important are Machinery, Motor Vehicles, Petroleum Refining, Pharmaceuticals, Paints & Varnishes, Paper & Paperboards, and Metal Containers & Closures. Some of the other industries dealt with are Perfumery, Opium Alkaloids, Mica and Mica Products, Oxygen, Pins & Clips, Needles, Match, Papier Mache, which constitute medium, small and cottage scale industries. An index is also provided.

As in the previous volumes of the series, each article provides comprehensive information on the development and present position of the industry, availability of principal raw materials; manufacturing methods, specifications and uses and statistical data on production and trade during recent years. The information on the industries has been collected from technical literature, Government publications and reports of the Directorate General of Technical Development, Commerce and Industry Ministries of Central and State Governments as well as concerned industries.

P.L. 480 Projects at CLRI

Officials from the U.S. Department of Agriculture visited the Central Leather Research Institute, Madras on Oct. 11, 1965 for negotiation/review of the following P.L. 480 Projects:

(i) Investigations of the chemical structure of tannins and other polyphenolic polymers in fruits as a contribution to the development of processing methods to control the adverse effects of these substances in fruit products.

(ii) Preparation of polypeptidyl derivatives of collagen and determination of their physicochemical properties to obtain information for use in developing leathers with improved properties.

The technical and administrative aspects of the grants for the following projects were reviewed :

(i) Studies on the hydro-thermal shrinkage of collagen and leather, to obtain fundamental information about this phenomenon for use in developing leathers with improved properties.

(ii) Development of test procedures for quantitatively evaluating the comfort properties of shoe leathers to improve the competitive position of leathers with respect to substitutes and to increase the utilization of hides and skins.

Visitors

A Soviet team of coal experts led by Mr A. Gonchazikov visited CFRI, Jealgora on Oct. 7 & 8, 1965 for formulating proposals with regard to development of coking coal resources for the Bokaro Steel Project.

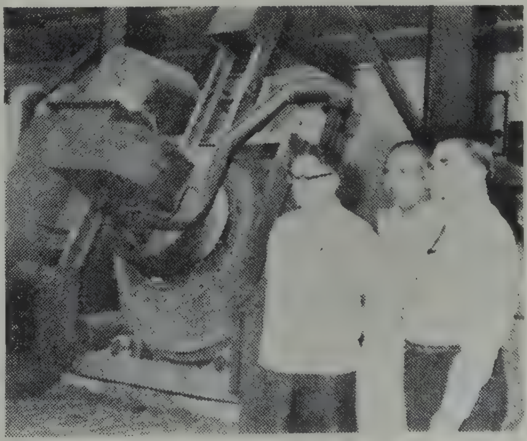
Mr Avdo Humo, Cabinet Minister of Yugoslav Government and Chairman of the Federal Council for Coordination of Scientific Activities of Yugoslavia accompanied by Dr R. Uvalich, the Yugoslav Ambassador to India and Mr Ruzic, visited the Central Glass and Ceramic Research Institute, Calcutta, on Oct. 29, 1965. They were taken round the Institute by the Director. Mr Humo evinced keen interest in the activities and achievements of the Institute and commended the efforts being made for utilizing the indigenous natural resources of the country.

CGCRI, Calcutta—Mr Avdo Humo examining a chunk of optical glass. Left to right are : Dr Atma Ram, Mr Ruzic, Mr Avdo Humo and Dr R. Uvalich

Mr Humo also addressed the members of the staff of the Institute and paid high tribute to the close cordial relationship of his country with India and to the contribution of the two countries towards world peace. He expressed hope that this collaboration in the field of politics and economy would be further extended to the exchange of experiences in the field of scientific and technological research.

Shri P.C. Kapoor, Director-General, Technical Development, Ministry of Industry and Supply, Government of India, visited NML, Jamshedpur on Oct. 18, 1965.

Shri Gian Chand, Deputy Minister of Industries, Government of Punjab, visited NML, Jamshedpur on Oct. 29, 1965. He was shown round the laboratories and plants by the Director who also explained to him the scope of research and development work which is aligned to meet the increasing requirements of mineral and metal industry.



NML, Jamshedpur—Shri Gian Chand, Minister for Industry Punjab Government (centre), with Dr B.R. Nijhawan the Director, at the direct iron ore reduction pilot plant installed at the Laboratory.

Dr F.A. Shikhaleiv, U.N. Representative, ONGC Research and Training Institute, Dehra Dun visited CBRI, Roorkee on Oct. 19, 1965.

Prof. E. Balint, Associate Professor of Building at the School of Architect and Building, University of New South Wales, Australia visited CBRI, Roorkee on Oct. 22, 1965 and delivered a lecture on 'Building Research in Australia'.

Mr Charles James Williams Muanga, Superintendent Engineer, Uganda visited CBRI, Roorkee on Oct. 30, 1965.

Shri S. Nijalingappa, Chief Minister of Mysore visited CFTRI, Mysore on Nov. 1, 1965.

Shri Ujjal Singh, Acting Governor of Punjab visited CSIO, Chandigarh on Nov. 4, 1965.

Mr A.E. Furness, Second Secretary, British High Commission (Nov. 2, 1965), Mr S.S. De, FAO Expert, Rome (Nov. 3, 1965), Prof. Weiskrantz, Experimental Psychology Laboratory, Cambridge University (Nov. 11, 1965), and Dr James H. Boulware, Agricultural Attache, U.S. Department of Agriculture, American Embassy (Nov. 12, 1965) visited CFTRI, Mysore.

STAFF NEWS

Appointments

Shri V.V.S. Rao, Pool Officer, CBRI, Roorkee (Oct. 1, 1965).

Shri A.K. Pachauri, Scientist, CBRI, Roorkee (Oct. 11, 1965).

Shri V.M. Kudale, Pool Officer, CFTRI, Mysore (Nov. 1, 1965).

Transfers

Dr C.P. Agarwal, Scientist, PID, New Delhi —Defence Coordination Unit, CSIR Secretariat, New Delhi (Nov. 1, 1965).

Shri M.G. Thakar, Administrative Officer, CSIO, Chandigarh—NAL, Bangalore (Nov. 2, 1965).

Shri R.P. Raut, Section Officer, CIMPO, Lucknow—CFRI, Jealgora (Nov. 4, 1965).

Shri S.J. Sant Ram, Administrative Officer, CIMPO, Lucknow—Mafatlal Industrial & Technological Museum, Bombay.

Resignations

Drs S.M. Gupte & U.Y. Rege, Scientists, CFTRI, Mysore (Oct. 28 & Nov. 1, 1965 respectively).

Nominations

Shri R.M. Krishnan, Scientist, NML, Jamshedpur—Representative of the Laboratory, Industrial Productivity Council for the Foundry Industry of the National Productivity Council.

Shri M.R. Chandrasekhara, Scientist, CFTRI, Mysore—Member, Sub-committees of the Central Committee on Food Standards : (1) Use of camel milk for human consumption ; (ii) Use of infant foods based on vegetable protein.

Shri C.P. Natarajan, Scientist, CFTRI, Mysore—Member, Sub-Committee of the Central Committee of Food Standards ; Technical Sub-Committee for spices essential oils/oleoresins, Spices Export Promotion Council.

Honours & Awards

Shri K.L. Datta, Scientist, CBRI, Roorkee has been elected a Fellow of Institute of British Architects, U.K.

Shri V.P. Kamboj, Scientist, CDRI, Lucknow—Ph.D (Panjab University) ; thesis *Influence of metals on spermatogenesis and fertility* (Guide : Dr A.B. Kar).

Shri B.N. Mukherjee, Scientist, CFRI, Jealgora—D. Phil. (Calcutta University : thesis : *Thermal diffuse scattering of X-rays from single crystals*.

Smt. Pramila Rao, CFTRI, Mysore—Ph.D. (Banaras Hindu University) ; thesis *1, 2-diphenyl ethylamine derivatives of potential pharmacological interest*.

Shri Ranga Subba Rao, Scientist, RRL, Hyderabad—Ph.D. (Osmania University) ; thesis : *Nature and utilisation of vegetable oils and their products*.

Shri P. Kanta Rao, Scientist, RRL, Bubaneshwar—Ph.D. (Andhra University); thesis: *Some new aspects of the analytical chemistry of potassium dichromate*.

(Contd from p. 1, col. 3)

from galvanising plants. Vacuum distillation and atmospheric distillation processes were studied in detail for complete recovery of zinc from dross. Vaccum distillation at lower temperature was found to be not only superior to atmospheric distillation at high temperature, but also more suitable for large capacity plants under Indian conditions.

Dr L. B. Singh

(Contd from p. 1, col. 1)

proceeded to England where he obtained the Ph.D. Degree in Pomology from the University of London in 1948. The same year he was appointed Assistant Professor of Horticulture, Government Agricultural College, Kanpur. Next year, he joined the Fruit Research Station, Saharanpur as Horticulturist and in 1957 he became the Director of the Horticultural Research Institute, Saharanpur, where he worked for five years and raised the Institute to the status of a first-rate research institution.

Dr Singh's research work on papain during 1956-57 at Saharanpur earned for him the distinction of being the first to receive the Rafi Ahmad Memorial Award, instituted by the Government of India. He also won the Watumull Award, the first international award in the field of agriculture conferred by the Watumull Foundation, Hawaii, in 1961, for his notable work in the field of Horticulture.

Dr Singh proceeded abroad in 1958 for special training at the leading Horticulture Research Institutes in USA, UK and at other institutions in Europe for a short period under the Rockefeller Foundation Grant.

Dr Singh has published 59 research papers and is the author of three books on Horticulture. His book on Mango has been considered an outstanding publication. He has guided research workers in the field of Horticulture. He has also been Editor of *Horticultural Advance* (1957-62) and 'Annual Report, Fruit Research Station, Saharanpur' (1950-62).

Dr Singh is a Fellow of the Royal Horticultural Society, London.

NOTIFICATION

It is proposed to appoint Directors for the following CSIR institutions (i) National Chemical Laboratory, Poona, (ii) Indian Institute of Experimental Medicine, Calcutta, (iii) Birla Industrial & Technological Museum, Calcutta, (iv) Visveswaraya Industrial & Technological Museum, Bangalore, and (v) Mafatlal Scientific & Technological Museum, Bombay. For posts (i) and (ii), the candidates are required to be scientists of high standing in the field of Chemistry & Chemical Engineering, and Experimental Medicine respectively. For posts (iii)—(v), the candidates are required to be Museologists of high standing with sound background of Physics, Chemistry or Engineering.

There is no standard form of application. Those who wish to be considered are invited to send a statement of their qualifications, attainments etc. to the Director-General, Scientific & Industrial Research. Others who may wish to send nominations for the post may kindly forward their proposals to the Director-General.

All communications will be treated as confidential. Statements and proposals should be received by the Director-General on or before 31st December, 1965 at the office of the Council of Scientific & Industrial Research, Rafi Marg, New Delhi-1.

Any further information in this connection may be obtained confidentially from the Secretary, Council of Scientific and Industrial Research.

NEW PUBLICATION

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Part VI (M-Pi)

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CSIR NEWS

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MYSORE

Setting up of National Institute of Oceanography

The Governing Body of CSIR has approved the setting up of National Institute of Oceanography. The Institute will also be assuming responsibility for the Units of the Indian Programme of the International Indian Ocean Expedition with effect from Jan. 1, 1966. The Director, Indian Ocean Expedition, will be redesignated as the Director, National Institute of Oceanography.

Hindi Unit, CSIR

The name of Hindi Unit, CSIR has been changed to 'Indian Languages Unit'.

IIBEM, Calcutta

The Indian Institute for Biochemistry and Experimental Medicine, Calcutta, has been renamed as 'Indian Institute of Experimental Medicine'. It has also been decided that the work relating to Biochemistry connected with experimental medicine would continue in the Institute.

Dr S.R. Valluri

Dr S.R. Valluri, Senior Professor and Head of the Department of Aeronautics and Applied Mechanics, Indian Institute of Technology, Madras, took charge as Director, National Aeronautical Laboratory, Bangalore, with effect from Nov. 23, 1965.

Dr Valluri (*b.* June 25, 1924) took degree in Mechanical and Electrical Engineering from the Banaras Hindu University in 1946, Diploma in Aeronautics from the Indian Institute of Science, Bangalore in 1948 and received the Douglas Pauley award for higher studies in the United States. He obtained Master Degree in Aeronautics from the

(*Contd on p. 4 col. 1*)

RESEARCH PROGRESS

NML, JAMSHEDPUR

Structure and Magnetic properties of some Alnico Magnet alloys—The effect of multiple precipitation controlling factors like cooling rate, ageing treatment and alloy composition on coercive force of iron-nickel-aluminium base alloys has been studied. The cooling rate has been found to be the most important variable controlling the magnetic quality of a particular alloy. The alloy develops the best magnetic properties if cooled at the critical cooling rate which greatly depends upon its chemical composition. The effects of copper, cobalt, aluminium and nickel have been studied in terms of their effect on the critical cooling rate and coercive force.

The high coercivity of Alnico, as revealed by the electron micrographic study of the cooled and tempered specimens, is related to fine dispersion of precipitates which form as platelets on mutually perpendicular (100) planes of the matrix. The size and shape of these platelets depend upon the cooling rate, ageing temperature and time. Some evidence is also brought forth to show that prior to the formation of platelets the solid solution first decomposes by rejection of iron atoms to form iron-rich zones.

Differently heat-treated specimens of alloy containing 12 per cent Co and 11 per cent Al on X-ray diffraction studies have revealed the presence of ordered and disordered b.c.c. structures in the cooled specimens and an additional f.c.c. structure similar to γ-iron in specimens tempered at and above 700°C. The transformations in this alloy are compared to those in iron in which f.c.c. γ-iron is formed at intermediate temperatures. The other Alnico alloys containing no cobalt showed the presence of b.c.c. structures only.

Studies have also been carried out to record the occurrence of constricted hysteresis loops in some Alnico permanent magnet alloys. Such loops have been observed in hitherto perminvar type soft magnetic materials only.

RRL, JORHAT

Vertical Shaft Kiln Cement Plant—Complete design and technical know-how for a 30 tons/day capacity vertical shaft kiln for the manufacture of cement has been developed for the first time in the country without any foreign technical assistance. A vertical kiln of this design is being erected at the laboratory, which would in turn help scaling up the plant capacity to 200 tons/day and above. To aid fabrication of this kiln at the laboratory workshops and also to select suitable raw materials to be used in the kiln, a prototype 100 kg./day capacity

(*Contd on p. 4 col. 1*)

RRL, Jorhat—Installation of Vertical shaft kiln

BRIEFS

SITRA Technological Conference

The Sixth Annual Technological Conference organized by SITRA, Coimbatore was held during Nov. 15-16, 1965. Inaugurated by Shri Krishnaraj M.D. Thackersey, Chairman, Governing Council, BTRA, Bombay under the Presidentship of Shri G.K. Devarajulu, Chairman, Council of Administration, SITRA, the Conference was spread over four sessions. The sessions were presided over by Shri G.K. Devarajulu, Mr V. Duxbury, Madura Mills Co. Ltd Madurai, Shri N. Radhakrishnan, Khatau Mills Ltd, Bombay and Dr B.W.X. Ponnaiya, Dean, Agricultural College, Coimbatore. In all, eleven papers on the following subjects were presented: Estimating savings from balance sheet analysis; Blending of polynosic fibres with cotton; High production carding; Pneumatic card cleaning system; Factors affecting the fractionating efficiency of a comber; Productivity in reeling cone winding and doubling; Linear programming in textiles; Study of different types of servicing spindles in spinning; Survey of quality of yarns; Fibre strength at finite gauge lengths of raw and mercerised cottons—A study on Bundles; and Fine structure approach to fibre friction.

SITRA, Coimbatore—Shri K. Sreenivasan, Director (extreme right) explaining the new drafting system, developed at the Association, to Shri Krishnaraj M.D. Thackersey (middle)

Symposium

The Central Building Research Institute, Roorkee organised a symposium on 'Changing Concepts of Human Habitation' during Dec. 8-10, 1965. Inaugurated by Dr A.N. Khosla, Governor of Orissa, the Symposium was attended by 70 delegates and observers including those from Canada, Australia, Netherlands, Kuwait, Italy and U.S.A. In all, 66 papers were presented and discussed at the four technical sessions: Human & Social Needs; Planning Concepts and Bye-laws; Architectural Concepts and Values; and Building Materials & Techniques.

Benzyl Chloride Proto-type Plant

A proto-type plant for the manufacture of benzyl chloride was commissioned into operation at RRL, Hyderabad by Dr M. Chenna Reddy, Minister for Finance and Industry, Andhra Pradesh on Nov. 22, 1965. The plant, designed at the Laboratory, has a production capacity of 250 kg. of benzyl chloride per day. It is based on a continuous process, which is a great advance on the batch-type process normally used in commercial practice.

Based on this know-how, a 2 tonnes/day commercial plant for the manufacture of benzyl chloride and related chemicals, *viz.* benzyl alcohol, benzyl acetate, benzyl benzoate, etc. is to be set up shortly at Hyderabad. These chemicals are at present imported to the extent of Rs 36 lakhs per annum. The production from this plant is expected to meet the country's requirements in respect of some of the basic organic chemicals and intermediates.

Visitors at CFTRI

Mr Devain W. Parrack, Johns Hopkins University centre for Medical Research & Training, Calcutta (Dec. 7, 8 & 9, 1965).

Mr Bruce Strassburger, Administrator, CARE, Bangalore (Dec. 8, 1965).

CFTRI, Mysore – King Mahendra and Queen Ratna of Nepal tasting some of the products, developed at the Institute, during their visit on Dec. 10, 1965

STAFF NEWS

Appointments

Sarvashri H. V. Mallikarjuna (Nov. 5, 1965), Scientist, T.K. Bose (Oct. 30, 1965) & S.N. Thirumalaiswamy (Nov. 8, 1965), Pool Officers, NAL, Bangalore.

Shri M.S. Ramaswamy, Pool Officer, CFTRI, Mysore (Dec. 1, 1965).

Dr Kuldip Raj Khanna, Pool Officer, NBG, Lucknow (Nov. 4, 1965).

Dr R.C. Bhardwaj, Pool Officer, and Dr O.P. Srivastava, Scientist CDRI, Lucknow (Oct. 7 & 30, 1965 respectively).

Resignation

Dr S.N. Dutta, Scientist, CDRI, Lucknow (Nov. 27, 1965).

Retirements

Shri A.W. de Souza, Administrative Officer, NAL, Bangalore (Sept. 16, 1965).

Dr M.N. Ramaswamy, Scientist, CIMPO Zonal Centre, Bangalore (Nov. 25, 1965).

Transfer

Shri M.G. Thakar, Adminis-Officer, CSIO, Chandigarh—NAL, Bangalore (Nov. 15, 1965).

Deputations

Shri P.A. Irani, Scientist, NAL, Bangalore, proceeded to Netherlands on Oct. 14, 1965 for higher studies in High-Speed Aerodynamics and Wind Tunnel Techniques at the University of Delft.

Dr K.S. Viswanathan, Scientist, NAL, Bangalore, proceeded to Dublin, Ireland on Oct. 26, 1965 for advanced studies in Shockwave Phenomenon and Shock Structure in Gas Dynamics under a scholarship offered by the Dublin Institute for Advanced Studies.

Shri K.P. Mukherjee, Scientist, NML, Jamshedpur, resumed duty on Oct. 18, 1965 after completion of 6 months' training in the field of Advanced Research on Corrosion and Development of Corrosion Resistant Alloys, in Japan under the Colombo Plan.

Shri B.R. Somashekar, Scientist, NAL, Bangalore, returned from Australia on Nov. 15, 1965 after completing nine months' training at the Aeronautical Research Laboratories, Melbourne under the U.N. Special Fund Aid Programme.

Shri H.C. Seetharam, Scientist, NAL, Bangalore, returned from U.K. on Nov. 24, 1965 after completion of one-year training at the Royal Aircraft Establishment, Bedford under the Colombo Plan.

Shri S. Balakrishna, Scientist, NAL, Bangalore, returned from Canada on Nov. 25, 1965 on completion of his assignment with the Canadian Vickers, Montreal, Canada in connection with fabrication of the 4 ft wind tunnel.

Nominations

Dr M.L. Dhar, Director CDRI, Lucknow — Member, Board of Directors, Indian Drugs and Pharmaceuticals, Ltd, and the Hindustan Antibiotics Ltd.

Dr G.S. Sidhu, Director, RRL, Hyderabad—Member, Study Group for Explosives, Chemicals & Allied Materials of the Planning Commision.

Dr G.S. Siddappa, Scientist, CFTRI, Mysore—Member, Dairy Research Advisory Committee, NDRI, Ministry of Food and Agriculture.

Shri C.P. Natarajan, Scientist, CFTRI, Mysore—Member, Standards for Chicory, Expert Committee, Directorate General of Health Services.

Shri S. Kuppuswamy. Scientist, CFTRI, Mysore—Member, Tuber Crops Commodity Committee of the Indian Council of Agricultural Research.

ISI Nominations

Shri C.P. Natarajan, Scientist, CFTRI, Mysore—Member Coffee and Cocoa Products Sectional Committee.

Shri K, Seshagiri Rao, Scientist, RRL, Hyderabad—Principal Representative, Sub-Committee on Methods of Test for Coal and Coke, and Alternate Representative Solid Mineral Fuel Sectional Committee.

Shri K.G. Rangrej, Scientist, RRL, Hyderabad—Principal Representative, Soil Mineral Fuels Sectional Committee.

Honours & Awards

Shri P.P. Bhatnagar, Scientist, NML, Jamshedpur, has been awarded the 'National Metallurgist's Day Award' for the year 1965, instituted by the Union Ministry of Steel & Mines for his outstanding contribution to research in non-ferrous metallurgy.

Dr G.S. Sidhu, Director, RRL, Hyderabad, has been appointed for a period of two years w.e.f. Oct. 27, 1965 a member of the Advisory Committee, constituted by the Government of Andhra Pradesh for providing guidance to the Technical Cell in the Directorate of Industries and Commerce.

Shri A. Rahman, Scientist-in-charge, Survey & Planning of Scientific Research Unit, CSIR, has been appointed a member of the National Committee for History of Science, constituted by the Government of India.

Dr S.C. Bhattacharyya, Scientist, NCL, Poona, has been elected Ordinary Fellow of the National Institute of Sciences of India.

Dr D.C. Roy, Officer-in-charge, Indian Plywood Industries Research Association's Field Station, Calcutta, has been elected a Fellow of the Institute of Wood Science, London.

Prof. Dinesh Mohan, Director, CBRI, Roorkee, has been elected a Fellow of American Society of Civil Engineers.

Shri N.C. Sinha, Scientist, CFRI, Jealgora, has been elected a Fellow of the Royal Statistical Society.

Shri K.L. Dutta, Scientist, CBRI, Roorkee, has been elected a Fellow Member of the Royal Institute of British Architects.

Shri G.L. Chetty, NCL, Poona—Ph.D. (Agra University); thesis: *Studies in sesquiterpenes* (Guide: Dr Sukh Dev).

Shri R.K. Gupta, NCL, Poona—Ph.D. (Agra University); thesis: *Studies in sesquiterpenes* (Guide: Dr Sukh Dev).

Shri D.S. Sankara Rao, RRL, Hyderabad—Ph.D. (Osmania University); thesis: *Studies on leafy vegetables with special reference to phosphorus and iron requirements of Amaranthus.*

Shri V. Chalapati Rao, Scientist, CPHERI, Nagpur—Ph.D. (Andhra University; thesis: *Chemical oceanographic studies in the Bay of Bengal* (Guide: Dr T.S. Satyanarayana Rao).

Dr S.R. Valluri

(Contd from p. 1, col, 1)

California Institute of Technology in 1950 and Ph. D. in Aeronautics in 1954 from the same Institute. He served in the California Institute of Technology for 10 years, specialising in the field of material behaviour including Fracture, Fatigue and Creep. He was a Consultant for the Missiles and Space Systems Division of the Douglas Aircraft Company, the United States Air Force, the Northrop Aircraft Corporation and others. Returning to India in 1964, he joined the Indian Institute of Technology, Madras, as Senior Professor and Head of the Department of Aeronautics and Applied Mechanics and continued in that post till he took up the present position.

Dr Valluri was awarded the Wright Brothers' Medal for the year 1963 by the Society of Automotive Engineers for his outstanding achievements in the field of Aeronautics. He is the first Indian to have received this Medal. He was invited to present papers at International Conferences on 'Fracture' held in the United States and Japan. Dr Valluri has to his credit a number of scientific research papers in the general field of Fracture.

Dr Valluri is an Associate Fellow of the American Institute of Aeronautics and Member of the American Society of Metals, Society of Experimental Analysis, and Society of Sigma XI.

RESEARCH PROGRESS

(Contd from p. 1, col. 3)

vertical shaft kiln has been fabricated and installed. A demonstration of the process was also arranged with a view to answering the numerous enquiries from those who were interested in setting up small scale cement plants.

CGCRI, CALCUTTA

Low Solubility Lead-Borosilicate Glaze from Glass cullet—Investigations were carried out to utilise waste glass cullets of known compositions for compounding low temperature earthenware glazes. The notable features of the final glaze developed, based on glass cullets, are its high resistance to crazing and abrasion, good gloss and covering capacity. It has been found suitable for the development of tender victoria green and pink coloured underglaze decorations. This single glaze composition could be effectively applied on ceramic bodies of widely varying compositions. The glaze has a good maturing range which helps to keep down the percentage of rejections during glost firing in commercial kilns.

PATENTS & PROCESS

Filed

101924: *Improvements in or relating to anticorrosion packaging*—K.S. Rajagopalan, N. Subramanyan & M. Sundaram, CECRI, Karaikudi.

101925: *Improvements in or relating to the chemical polishing of copper and its alloys*—B.A. Shenoi, S. Gowri & K.S. Indira, CECRI, Karaikudi.

101926: *Improvements in or relating to the manufacture of benzoyl chloride from benzotrichloride*—I.K. Kacker, H. Dakshinamurty, G.S. Sidhu & S.I. Ahmed, RRL, Hyderabad.

101929: *Improvements in or relating to cathode material for single shot batterie*— M.A.V. Devanathan, B.A. Shenoi, P.L. Joseph & V. Balasubramanian, CECRI, Karaikudi.

102099: *A process for the isolation of a tranquillizing principle from the roots of Rauwolfia serpentina*—M.R.R. Rao & S. J. Rasalkar, Bombay.

102481: *A method for recovering volatile metals from their waste metallic fines*—G. Basak, V. S. Sampath & P.P. Bhatnagar, NML, Jamshedpur.

102489: *Friction prop (three friction surfaces with two friction wedges*—B. Singh & N.C. Saxena CMRS, Dhanbad.

Accepted

90957: *Preparation of porous carbon electrode using vegetable carbons for use in air depolarised cells*—A.K.A. Waheed, K.V.N. Rao K.S.G. Doss, CECRI, Karaikudi.

92277: *Improvements in or relating to process of production of ceramic rods for pyrolytic carbon resistors*—Shiv Saran & S. Rangarajan, NPL, New Delhi.

Sealed

86382: *An improved process of coal flotation*—A. R. Ray, B. B. Konar, G.G. Sarkar & Adinath Lahiri, CFRI, Jealgora.

86383: *Process for the production of potash alum*—K. Seshadri, G. D. Bhat & J. R. Sanghavi, CSMCRI, Bhavnagar.

86639: *An inexpensive chemical method of dicing a semiconductor slice for the manufacture of transistor family device*—Kanwal Singh Balain, CEERI, Pilani.

CBRI PROCESS

Water and Weather-proof Resin Composition—A resin composition, which is fully resistant to water and weather for a very long time, has been developed from cashewnut shell liquid. The resin serves as a good protective coating for expanded polystyrene and other similar materials in buildings, textile mills, etc. The protective coating hardens at room temperature and has a good adhesion to the expanded polystyrene. The same or slightly modified composition is suitable for protecting building boards in exterior locations. The covering capacity is 10 sq. m. (100-μ thickness) per kg. of resin composition.

The process of manufacturing the composition is very simple and a major part of the raw materials and the equipments needed are indigenously available. The total investment for a plant producing ½ ton of resin per day is estimated at Rs 74,990, comprising Rs 13,000 capital investment and Rs 61,990 working capital. The cost of production per ton of resin is estimated at Rs 2,488.

Parties interested in commerical exploitation of the process may correspond with the Executive Director, National Research Development Corporation of India, Mandi House Lytton Road, New Delhi-1.

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CSIR NEWS

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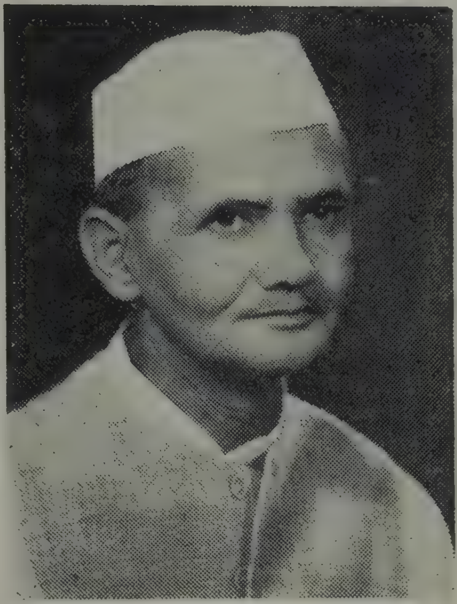
CSIR PAYS HOMAGE TO SHRI LAL BAHADUR SHASTRI



(Oct. 2, 1904—Jan. 11, 1966)

The staff of the Council of Scientific & Industrial Research paid reverential homage to the late Prime Minister & President CSIR, Shri Lal Bahadur Shastri at a condolence meeting at the CSIR Secretariat, New Delhi on Jan. 13, 1966.

Dr S. Husain Zaheer, DGSIR, who presided at the meeting said that Shri Shastri was dedicated to science as his predecessor Shri Jawaharlal Nehru and encouraged the development of science as a means to achieve self-reliance. In the recent state of emergency Shri Shastriji firmly concluded that science must be given its due place in the country if self-reliance were to be made a reality.

Dr Zaheer added, "The best tribute that we as scientists can pay to the departed leader is by striving to achieve his goal of self-reliance through dedicated and sincere work".

The following resolution was adopted :

"This meeting of the staff of Council of Scientific & Industrial Research held on Thursday, January 13, 1966 records with deep regret the death of Shri Lal Bahadur Shastri, the Prime Minister of India and President of CSIR. Under his guidance, CSIR launched on a new phase of scientific research seeking to make the country self-reliant. We all mourn the tragic loss that we have suffered in his death and resolve that our sympathies be conveyed to Shrimati Lalita Shastri".

NML Foundry Station in Madras

A new Foundry Station (of NML) at the industrial estate, Guindy, was declared open on Dec. 14, 1965, by Shri R. Venkataraman, Minister for Industries, Madras. This is the second in the chain of four stations being set up by the National Metallurgical Laboratory, Jamshedpur. The first one was set up at the industrial estate, Batala, Punjab in 1964. The setting up of foundry stations at important centres in the country would enable foundries to utilise the technical service facilities, improving thereby the quality of castings.

The Station at Guindy is equipped with adequate facilities for (i) testing foundry sands and bonding clays for routine control of sand mixtures as also for finding out their suitability for use for foundry moulding purposes, (ii) undertaking the analysis of both ferrous and non-ferrous metals, (iii) carrying out

(*Contd on p. 4, col. I*)

RESEARCH PROGRESS

National Laboratories

CGCRI, CALCUTTA

Studies on Soda-Lime-Silica Glass—Effects of small additions of alumina, boric oxide and titania on the properties of soda-lime-silica glass have been studied. Up to 3 per cent, Al_2O_3, B_2O_3 or TiO_2 was separately added to a glass of composition, SiO_2, 74; CaO, 9.5; and Na_2O, 16.5 per cent by weight. It was observed that B_2O_3 and TiO_2 lowered the high temperature viscosity of the glass almost to the same extent, while Al_2O_3 showed the reverse effect. Low temperature viscosity and chemical durability of the glasses were increased but thermal expansion was decreased, more markedly by B_2O_3 than by Al_2O_3 or TiO_2. The effect of addition of higher content of B_2O_3 was particularly noticeable. Glasses containing B_2O_3 had higher annealing range than corresponding Al_2O_3 or TiO_2 glasses.

NML, JAMSHEDPUR

High Carbon Ferro-Chrome—The feasibility of using Talchar low temperature carbonized (L.T.C.) coke for the production of high carbon ferro-chrome was investigated in the pilot submerged arc furnace. Operational conditions were standardized after comprehensive pilot plant trials for the production of high carbon ferro-chrome containing Cr, 64.4; Si, 5.8; and C, 6.2 per cent. The average power consumption per tonne of the product was esimated at 454 kWhr. It was observed that Talchar L.T.C. coke could be most successfully employed for the production of high carbon ferro-chrome.

(*Contd on p. 4, col. I*)

BRIEFS

Structural Engineering Research Centre, Roorkee

A one-month course on Advanced Structural Engineering, specially organised to train the army officers to undertake complicated structural designs using electronic digital computers, was inaugurated at the Centre on Jan. 3, 1966. Eight officers deputed by the Army Headquarters joined the course.

The application of digital computation techniques to the analysis of complex structures such as space frames and folded plates and multistoreyed buildings will be covered by the course. The trainee officers will also be introduced to the ultimate design procedures and model analysis techniques. The course is the first of its kind to be offered in India.

CMRS Open Days

The Central Mining Research Station, Dhanbad organised Open Days on Dec. 5 & 12, 1965 (*CSIR News*, Vol. 15, No. 22, p. 2). Some 450 visitors from various walks of life, majority of them from the mining industry, visited and evinced keen interest in the demonstrations of the research and testing activities at the laboratories of the Station. Testing of explosives, roof bolting studies, application of electronics to mining, determination of the strength of wire ropes were some of the demonstrations which attracted a good number of visitors. Technical films on mining and CMRS publications counter were other items of interest.

Defence Number of Vigyan Pragati

The Indian Languages Unit of CSIR has brought out a special issue (pp. 108, price 50 P) of the Hindi popular science journal 'Vigyan Pragati'. The issue contains 23 articles broadly classified under the two categories, arms and ammunition, and attainment of self-sufficiency. Some of the interesting articles are on napalm bomb, gnats, sabre jets, guided missiles, bacteriological warfare, avoidance of wastage in food and self-sufficiency in medicines. A special article by the Director-General Scientific & Industrial Research on the Role of National Laboratories in Defence is also included.

The publication is nicely supplemented with illustrations.

Mr James Swarbrick

Mr James Swarbrick, Chief of Unesco South East Asia Division, Department of Applied Science, visited CMERI, Durgapur on Dec. 2, 1965, in connection with the establishment of the Mechanical Engineering Research and Development Organisation (MERDO) under which it is proposed to set up with UN special Fund Aid ten centres in industrially developing areas.

Mr Swarbrick expressed the view that UN Special Fund's Aid to MERDO would serve the Special Fund to keep in touch with the development of the Institute which has been receiving aid from the same source. He also felt that in view of the pressure being built up on the Institute for designs and development advice, the establishment of the new centres would effectively extend the activities of the Institute all over the country.

Mr Swarbrick also mentioned that with a view to find out areas of mutual cooperation in the scientific fields of the under-developed countries of Asia and Africa, a symposium is being arranged in 1967. He hoped that the institutions receiving aid from UN Special Fund, like CMERI, would take a leading part in the symposium.

Dr S. H. Zaheer

Dr S. Husain Zaheer, Director General, Scientific & Industrial Research, will be representing CSIR on the Council of the Indian Institute of Science, Bangalore for the quadrennium 1966-69.

Shri K.G. Krishnamurthi

Shri K.G. Krishnamurthi, Secretary, CSIR, will be representing CSIR on the Court of the Indian Institute of Science, Bangalore, for the quadrennium 1966-69.

Dr B.N. Mitra

Dr B.N. Mitra joined IIEM, Calcutta as Emeritus Scientist w.e.f. Nov. 29, 1965.

STAFF NEWS

Appointments

Shri M.L. Jain, Scientist, CD & E Unit, CSIR, New Delhi (Aug. 27, 1965).

Dr Somnath Ghosh, Pool Officer, IIEM, Calcutta (Dec. 15, 1965).

Sarvashri S.R. Shurpalekar & J.I. D'Mello, Scientists, CFTRI, Mysore (Dec. 20, 1965).

Shri M.P. Sood, Scientist, CSIO, Chandigarh (Dec. 23, 1965).

CMERI, Durgapur — Mr James Swarbrick at the electronics division

RESEARCH AND INDUSTRY GET-TOGETHER

The two-day conference of scientists and representatives of industry was inaugurated at the NPL Auditorium on Dec. 20, 1965 by Shri M.C. Chagla, Union Minister for Education & Vice-President, CSIR. The Minister for Industry Shri T.N. Singh, the Vice-Chairman of the Planning Commission Shri Asoka Mehta, Planning Commission member Shri S.G. Barve, Minister for Supply and Technical Development Shri K. Raghuramiah, prominent industrialists and scientists participated in the function.

Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research, in his welcome address recapitulated the efforts made by the Council in fulfilling its primary scope and functions and expatiated on the fruitful results that are likely to flow as a consequence of this Get-Together particularly as a result of the present emergency which has created a new upsurge of self-defence, self-reliance and self-sufficiency. He then defined the tasks of the fifteen Working Groups in working out short-term, medium-term and long-term projects on the basis of discussion of the key paper and other papers before them and spelling out their specific recommendations.

Shri M.C. Chagla in his presidential address referred to the contribution that science and industry must make in collaboration to overcome reliance on foreign know-how and collaboration and make the country self-reliant.

Shri T.N. Singh suggested that the Working Groups should address themselves to the urgent tasks such as large-scale programme of import substitution/avoidance and diversification of production with a view to keep the machinery and equipment engaged and exhorted the scientists and industrialists to recapture the spirit of 'Swadeshi' in their future endeavour.

Shri Asoka Mehta expatiated upon the profound and critical importance of the coming ten years in the country's development and the urgent need to bring about qualitative changes which the quantitative developments demand in order not to find the people of the country in complete disarray. He called upon the delegates to evolve a meaningful programme of cooperative action to the challenge of the time and to work out pin-pointed and purposeful recommendations which could be taken into account by the Planning Commission in finalising the Fourth Plan.

Shri Raghuramiah and Shri Barve urged the need for the follow-up of the sessions of the conference by setting up a high power body for implementation.

The proceedings of the conference were spread over the following fifteen Working Groups : (1) Electronics instruments and physics based industries ; (2) Industrial organic chemicals, dyes and intermediates, rubber, resins, adhesives, plastics, paints, varnishes and surface coatings ; (3) Inorganic chemicals and fertilizers ; (4) Drugs and pharmaceuticals ; (5) Mechanical and electrical engineering ; (6) Food and agriculture ; (7) Metallurgy, steel and non-ferrous metals ; (8) Paper, pulp, textiles and man-made fibres ; (9) Mining and minerals ; (10) Petroleum technology and petro-chemicals ; (11) Energy and coal ; (12) Glass and ceramics ; (13) Aircraft structures, aeronautical engineering and propulsion systems ; (14) Building materials and road building ; and (15) Research utilisation and policy matters.

The Working Groups met individually on the afternoon of Dec. 20, 1965 and the forenoon of the next day and pin-pointed the needs of each and every major industry covered by each group and means by which they can be met. At the concluding session presided over by Shri M.C. Chagla, the conveners of the Working Groups presented the findings and recommendations of each group. Shri Chagla in his concluding address approved of the suggestion made by some Working Groups of levying a cess of 5 per cent on the value of output of each category of industry for financing research. Shri Baldev Singh, the convener, thanked the delegates for their enthusiastic participation and hoped that the Get-Together would be productive of useful results.

NPL, New Delhi—Shri M.C. Chagla, Union Minister of Education and Vice-President, CSIR, addressing the conference at the inaugural session

Symposium

A symposium on 'Water Pollution Control' was held at CPHERI, Nagpur, during Dec. 28-30, 1965 under the joint auspices of the Institute and the Indian Association of Water and Water Pollution Control. Inaugurated by Shri S.K. Wankhede, Minister for Finance, Government of Maharashtra, the symposium was attended by over 200 delegates respresenting State Governments, local bodies, research and educational institutions. A key-note address entitled 'Poverty and Development' was given by Shri Putrej Singh, General Superintendent, Bhilai Steel Plant. The symposium was spread over five technical sessions and the following three topics were dealt with; (i) Sewage treatment; (ii) Industrial waste treatment; and (iii) Stream sanitation and reuse of effluents. In all, 36 papers were presented and discussed.

(*Contd from p. 1, col. 1*)

chemical analysis of moulding sands, etc. In the second phase, it is proposed to expand the service facilities to enable the Station to undertake metallography and mechanical testing of metals and alloys, and also to undertake experimental work on problems relating to metal melting. The Station has a small library which will gradually be expanded to provide facilities for technical reference on diverse fields of foundry technology.

The following tentative programme of work to be implemented in a phased programme has been envisaged for the Station: To tender technical advice regarding selection and application of indigenous foundry sands and other moulding materials including selection of metal charges for the production of various types of castings.

A 16-page brochure entitled NML Foundry Station, Madras was brought out on the occasion.

RESEARCH PROGRESS

(*Contd from p. 1, col. 4*)

CFRI, JEALGORA

Iron making with non-coking Coals—A process for production of iron with non-coking coals in not only the existing type of large furnaces but also in smaller and low shaft furnaces has been developed by the Institute. The advantage of the process is that it enables direct use of materials such as ore fines, coal or coke fines, and limestone fines, which cannot be used in conventional iron making plants. When developed commercially the process will enable large scale production of iron in Andhra Pradesh, Orissa, Madhya Pradesh, Madras and Maharashtra which possess large reserves of iron ores as well as non-coking coals.

The process consists in briquetting of fine sized raw materials with or without pre-treatment and then hardening by a catalytic heat treatment technique developed at the Institute. The briquettes so formed could be used as such or as a part of the burden in conventional or low shaft furnaces. They could also be smelted in electric or rotary furnaces.

Production of the briquettes has already been achieved on ½-1 ton/hr pilot plant scale. Further investigations, necessary for perfecting the process as well as increasing its range of operations, are in progress.

CPHERI, NAGPUR

Modified Sludge Digestion Tank—A modified two-storeyed tank (commonly known as Imhoff tank) has been constructed in the Institute premises. This tank, like the septic tank, combines sedimentation with sludge digestion. The digestion takes place in a compartment other than the one where settlement occurs. Thus, the gas generated in the process of sludge digestion does not interfere with the settling process with the result that a better effluent is obtained.

The main feature of the tank is a mixing arrangement for the incoming fresh sludge with the digested sludge to give better gas production. A single gas collection chamber is provided in the centre with two sedimentation chambers, one on either side. This arrangement facilitates the collection of gas. A pilot plant has also been set up for studying the efficiency of the unit in sewage treatment and sludge digestion and to evaluate the economy of the gas collection from the settled sewage.

The pilot plant studies will cover the following objects: (i) to dispose off the domestic waste from small communities and industrial installations economically; (ii) to investigate the efficiency of the treatment with a view to obtain an effluent free from public health hazard for irrigation purposes and other uses; (iii) to investigate the sludge digesting efficiency of the tank with a view to use the digested sludge as manure for agricultural purposes; (iv) to investigate the economy of using the gas obtained in the process of sludge digestion; (v) to investigate the possibility of using oxidation pond in series with Imhoff tank to form a complete treatment plant for places where sufficient land is not possible for complete treatment by oxidation pond alone.

PATENTS

Filed

101927: *Continuous production of synthesis gas*—M.N. Rao, J.R. Giradkar & H.C. Jain, IIT, Kharagpur.

101930: *Improvements in or relating to nickel electrodeposition*—B.A. Shenoi, R. Subramanian, V. Srinivasan & C. Balasingh, CECRI, Karaikudi.

102482: *Improvements in or relating to the electrolytic preparation of potassium perchlorate*—H.V.K. Udupa, S. Sampath, R. Visvanathan & M. Nagalingam, CECRI, Karaikudi.

102483: *An improved method for the recovery of metallic values from waste metallic fines*—G. Basak, V.S. Sampath & P.P. Bhatnagar, NML, Jamshedpur.

102485: *Improvement in or relating to the electrochemical production of succinic acid from either maleic acid or fumaric acid*—H.V.K. Udupa, M.S. Venkatachalapathy, R. Kanakam, CECRI, Karaikudi.

102603: *Electrical roof bolt load cell* (*M. Section*)—Bhagwant Singh CMRS, Dhanbad.

102604: *Electrical load cell of 'M' Section* — Bhagwant Singh, CMRS, Dhanbad.

102675: *Electronic over-voltage protection device*—K.R. Rao & P.R. Rajagopalan, CBRI, Roorkee.

Accepted

90470: *Improvement in or relating to the manufacture of lime-surkhi mixture*—N.R. Srinivasan, M.L. Bhatia, R.K. Ghosh, Manohar Lal Puri & S.R. Mehra, CRRI, New Delhi.

90675: *Improvements in or relating to the manufacture of phosgene (carbonyl chloride)*—R.T. Thampy & S.R. Goel, SRIFIR, Delhi.

90676: *A process for the extraction and recovery of phenols from distillates of coal tar and mineral oil distillates containing phenols*—S. Moinuddin Ahmed, Y.V. Subba Rao, R. Vaidyeswaran & G.S. Sidhu, RRL, Hyderabad.

90677: *A new method for the preparation of formic acid*—H.G. Vartak, S.G. Patil & S.V. Paranjpe NCL, Poona.

Printed and published by Shri S.A. Chari, Editor, Publications & Information Directorate (CSIR), Delhi-12, at Asia Press, Delhi-6.

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CSIR NEWS

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SEMINAR

A seminar on 'Hydrogen Production and Utilization in Petroleum Refining and Petrochemical Industries' is being organised by the Indian Institute of Petroleum, Dehra Dun, during March 19-21, 1966. Shri O.V. Alagesan, Union Minister of Petroleum and Chemicals, is expected to inaugurate the seminar.

There will be five technical sessions on (i) Production of hydrogen from oil and gas; (ii) Production of hydrogen from coal and lignite; (iii) Utilization of hydrogen for ammonia manufacture; (iv & v) Utilization of hydrogen in petroleum refining and petrochemical industries. The papers are expected to deal with the following aspects of the subject : process description and data, materials of construction, commercial applications, economics of plants and processes, hazards and safety measures.

Insdoc Course Results

Results of the first batch (1964-65) of candidates, who underwent the one-year Advanced Training Course in Documentation and Reprography, conducted by Insdoc, New Delhi, have been declared. The following are the successful candidates :

Distinction—K. Ramaswami (PID, New Delhi).

Second class—T. Viswanadham (Bharat Heavy Electricals, Hyderabad), (Smt.) J.K. Ahluwalia (Insdoc, New Delhi), V. Subramanian (Heavy Electricals Ltd, Tiruchirapalli), V.K. Gupta (Solid State Physics Laboratory, Ministry of Defence, New Delhi), B. Garudadwajan (IIP, Dehra Dun), T.R. Anantha Sankar (Heavy Electricals Ltd, Tiruchirapalli), I.N. Sen Gupta (IIEM, Calcutta), S. Sirajul Husain (RRL, Hyderabad), T.R. Venkatasubrahmanian (CECRI, Karaikudi), and K. Harihara Prasad (RRL, Hyderabad).

RESEARCH PROGRESS

CSMCRI, BHAVNAGAR

Potassium Chloride from Mixed Salt—A process has been worked out for the extraction of potassium chloride from mixed salt produced by solar evaporation of bitterns. The main feature of the process is that it utilizes distillery waste liquor (from soda ash manufacture) of 8 per cent calcium chloride, instead of the 40 per cent concentrate used in the common processes. The mixed salt is treated with the distillery waste as such. Gypsum is precipitated in fine form and removed by filtration. The filtrate on solar evaporation to 32° Be′ yields NaCl-KCl mixture containing about 40 per cent potassium chloride. At this stage, major quantity of potassium chloride (*c*. 65%) is recovered. On further solar evaporation to 36°Be′, remaining potassium chloride is recovered as carnallite.

Overall recovery of potassium chloride as NaCl-KCl mixture and carnallite is about 85 per cent. If the gypsum is washed and washings are added to the filtrate, the recovery of potassium chloride improves to about 90 per cent. Further experiments are in progress The process is simple and can be advantageously used by soda ash manufacturing units and adjacent salt farms.

CGCRI, CALCUTTA

Use of Impure Variety of Indian Talc for Manufacture of Steatites—Investigations were undertaken to prepare steatites, used in electrical and electronic industries as low-loss insulators, from an indigenous and more abundantly available low grade variety of talc (yellow variety) which is generally considered unsuitable for such purposes because of its colour. Rusults indicate that the yellow variety of Indian talc mixed with the proper proportion of clay, magnesite and barium carbonate could be satisfactorily used to produce even the insulators of grade 16. Bonding agents used were starch and wax. The bodies were fired in an electric kiln using magnesite bricks and magnesite powder as kiln setting materials. An increase in the clay content improved the forming properties of the body mix and the use of binder was rendered unnecessary. As the maturing of the composition developed was low (1275°C.), it was amenable to firing in the existing ceramic kilns of the country, but the firing range being short (one cone), careful time-temperature control near the maturing temperature was necessary.

NML, JAMSHEDPUR

Forsterite Refractories—Pilot plant investigations were carried out on the production of forsterite refractories (for study of process variables) from serpentine, a basic rock material. Results have shown that it is possible to process serpentine to make forsterite refractories by a stage process, provided the serpentine powders are properly graded and blends of high packing densities are used. Magnesite, having certain properties of light calcined magnesia, has been found suitable for addition to such refractories. A fabrication pressure of the order of 10,000-14,00 p.s.i. has been found to be optimum for these mixes.

The results also confirm that on a large scale, the two-stage process, originally developed for this work, yields products of satisfactory properties.

CLRI, MADRAS

Polishing Leather Straps—A process for the manufacture of polishing leather straps out of ox-butts has been evolved. The straps produced are comparable in quality

(*Contd on p. 4, col. 1*)

BRIEFS

Central Design and Engineering Organisation

The Central Design and Engineering Unit, New Delhi, has come into being as a separate Organisation with an Executive Council and Budget of its own, consequent on the decisions of Governing Body. The Organisation will be in the charge of Dr K.S. Chari, Scientist, who will exercise all the powers and functions of a Director. The Organisation will continue to be housed for the present in the CSIR headquarters building at New Delhi.

Proceedings of Symposium on Puzzolanas

The proceedings of the symposium on 'Puzzolanas—their survey, manufacture and utilization' held in New Delhi during December 1964, has been brought out by the Central Road Research Institute, New Delhi. The publication (cyclostyled, pp. vi+168) gives a brief account of 37 papers presented and discussed under the following sessions: Puzzolana survey and fundamental research ; Manufacture of puzzolanas and puzzolanic products and their general properties; and Utilization of puzzolanas in puzzolanic products with special reference to buildings and roads. Detailed discussions held at every session of the symposium form a major part of the publication. A summary of the deliberations of the symposium and the resolutions adopted have also been included.

Catalogue of Serials in National Science Library

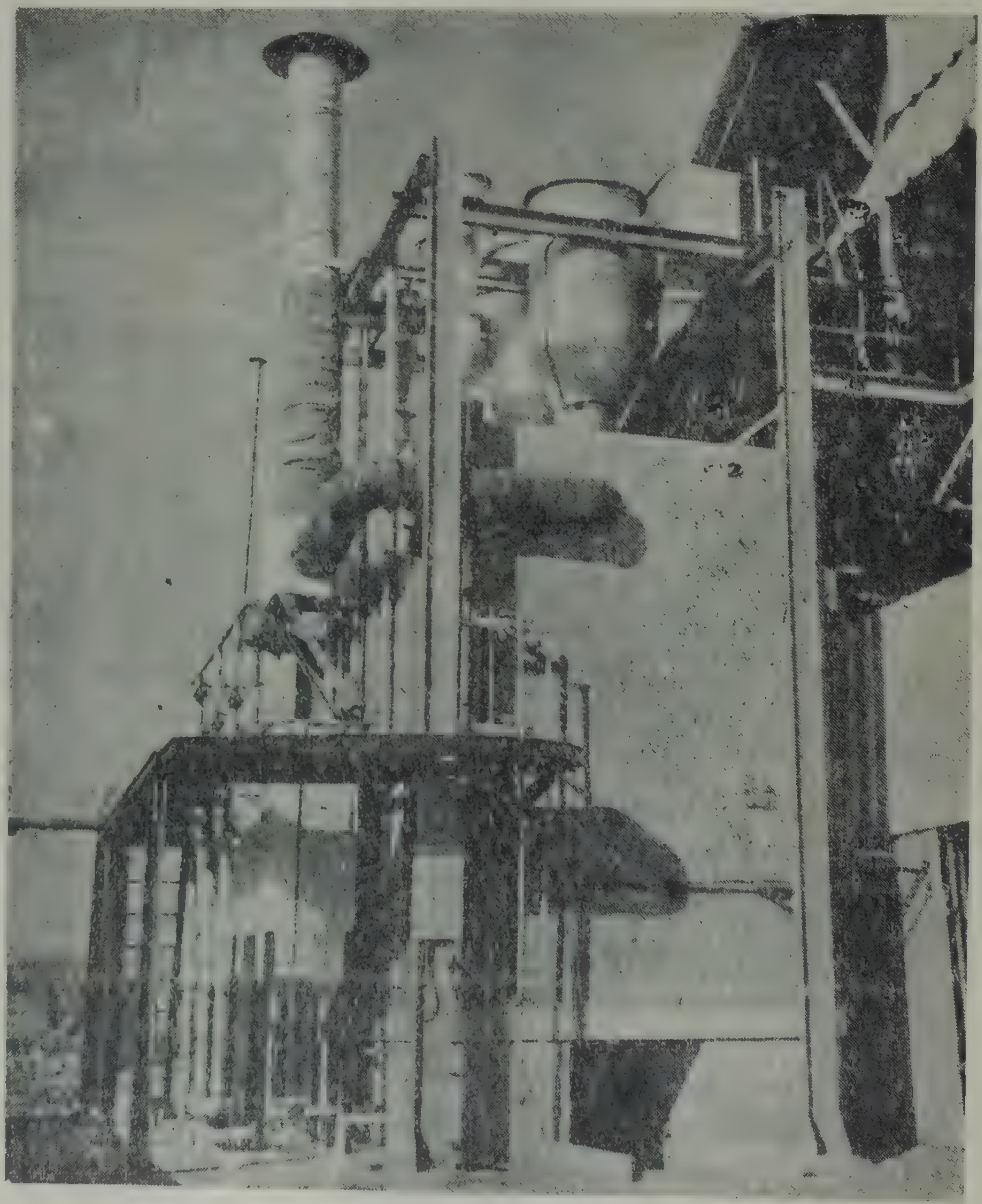
This is the latest release from the Indian National Scientific Documentation Centre, New Delhi. The publication (Pp. ix+407), rehearsing some 3,447 titles available in the National Science Library, consists of two parts: the main part enumerating the titles with bibliographic collation arranged in alphabetical order, and the index part. The description about the serials covers: the title in full along with alternate title if any, name of the sponsoring body, place of publication, a short history of the title, and the languages in which the serial is published. In case of cover-to-cover translation of serials, the title in the original language is also given.

The index part consists of classified index, language index and the sponsor index. In the classified index, the titles are arranged alphabetically under each subject head according to UDC system, and abstracting serials are placed at the beginning of every subject. The language index includes the titles of the multilingual serials under an independent head given at the beginning and the titles of the serials in different languages under the separate language heads. The sponsor index gives the titles under the names of sponsoring bodies.

CFRI Coal Fertilizer Plant

A 2 tons/day capacity coal fertilizer plant was commissioned into service at CFRI, Jealgora by Shri Satish Chandra, Chairman, Fertilizer Corporation of India, on Feb. 1, 1966. The plant, designed and fabricated at the Institute, is based on a process developed at the Institute. The process consists in simultaneous oxidation and ammoniation of coal or lignite in a series of fluid bed reactors. The advantage of the fertilizer is that it possesses the properties of both mineral nitrogen and soil humus.

The fertilizer has been under field trials on several crops for the past few years and encouraging results have been achieved. The Union Ministry of Agriculture has initiated large scale trials of this fertilizer-cum-soil conditioner on paddy, wheat, jute and sugarcane crops at different agricultural research centres in the country. The Toklai Experimental Station at Jorhat is conducting experiments with the fertilizer for tea-growing. Also, great interest has been shown in this process in Canada, Australia, and USA. The Institute offers to supply the necessary know-how and fertilizer to the interested parties for experimental trials.



CFRI, Jealgora—Coal Fertilizer Plant

NML, Jamshedpur

The Laboratary extended instructional and training facilities to a batch of thirty-one students of Matallurgy from the Indian Institute of Technology, Madras. Special lectures on the following topics were arranged : Modern physico-chemical methods of metallurgical analysis; Ore dressing techniques for Indian iron and managenese ores; and Manufacture of iron by the low shaft furnace.

CPHERI, Nagpur

The Institute has been recognised by the Nagpur University as a research centre for prosecuting research work leading to the award of Ph. D. degree in chemistry, zoology, biochemistry and civil engineering.

Shri Chagla visits SITRA

Shri M.C. Chagla, Union Minister of Education and Vice-President of CSIR, visited South India Textile Research Association, Coimbatore on Jan. 30, 1966. In an address to the industrialists and scientists, Shri Chagla assured that research in India would not suffer for want of financial assistance from the Government. He called upon the industry to contribute more towards scientific research so as to keep pace with the development in other countries.

Shri Chagla exhorted scientists and technologists to help in manufacture of textile machinery so as to make the country self-reliant, and also exphasized the need to reduce cost of machinery produced, with a view to compete with the world market. He also stressed on the need for automation.

Referring to the cotton textile industry, he pointed that this industry is passing through a crisis as the man-made fibres are fast replacing cotton yarn. Research workers in India should therefore concentrate on the evolution of mixed cotton-synthetic fibres so as to keep this industry alive.

Shri Chagla commended the Association's contribution to industrial development and said that this institution is a shining example of collaboration between industry and research.

Visitors

Profs. Silin of Lebedev Institute, Moscow, Aberikosov of the Institute of Theoretical Physics, Moscow, and Jaroslav Pluhar of the Czechoslovak Academy of Sciences, Prague, visited CGCRI, Calcutta on Jan. 10, 1966.

Prof. Dusan Hadzi and Prof. Aleksander Despic of the Federal Council for Sciences of Yugoslavia visited CGCRI, Calcutta on Jan. 18, 1966.

Dr Ivan Lesny of the Neurological Teaching Hospital, Prague, Czechoslovakia, visited CDRI, Lucknow on Jan. 10, 1966.

Dr A.M. Shams-el-Din, Director, National Research Centre, UAR, visited NML, Jamshedpur on Jan. 14, 1966.

The following scientists visited CSIO Chandigarh:

Prof. P.M.S. Blackett, Professor of Physics, Imperial College of Science and Technology, London (Jan. 3,1966), Prof V.A. Fock, University of Leningrad, Prof. V.P. Silin, Lebedev Institute of Physics, & Prof. A. Aberikosov, Institute of Theoretical Physics, Moscow (Jan. 4, 1966), Prof. F. Paul, Central Research Laboratory, Budapest, and Brig. B.M. Chakra varti, Director, Electronics and Radar Development Establishment, Defence Science Organisation, Bangalore (Jan. 7, 1966).

STAFF NEWS

Appointment

Shri P.C. Panda, Scientist, CFTRI, Mysore (Jan. 17, 1966).

Transfers

Shri A.P. Jain, RRL, Jorhat, joined CSIO, Chandigarh as Administrative Officer (Dec. 27, 1965).

Drs G.B. Singh & (Smt.) S.V. Chandra, Scientists, CDRI, Lucknow—Industrial Toxicology Research Centre, Lucknow (Jan. 1, 1966).

Resignation

Dr N.M. Roy, Scientist, CDRI, Lucknow (Jan. 21, 1966).

Nomination

Prof. K.S.G. Doss, Director, CECRI, Karaikudi—Member, Board of Governors of the Indian Institute of Technology, Madras for a period of three years with effect from January, 1966.

ISI Nominations

Dr I.K. Kacker, Scientist, RRL, Hyderabad—Principal Representative, Drafting Panel for Nitrobenzene.

Shri Upkar Singh, Scientist, NML, Jamshedpur—Member, Basic Engineering Standards Sub-Committee.

Shri T.V. Prasad, Scientist, NML, Jamshedpur—Member, Petroleum Coke Sub-Committee.

Sarvashri S. Bagchi & N.C. Sinha, Scientists, CFRI, Jealgora—Convener & Member respectively, Panel for Studying the Sampling Procedures of the Solid Mineral Fuel Sectional Committee.

Sarvashri S.K. Majumdar & M. Muthu, Scientists, CFTRI, Mysore—Principal & Alternate Member respectively, Pesticides Containers Sectional Committee.

Drs N.L. Lahiri & D.P. Sen, Scientists, CFTRI Mysore—Principal & Alternate Member respectively, Dried Fish Products Sub-Committee.

Shri B.H. Krishna, Scientist, CFTRI, Mysore—Member, Edible Starches Sectional Committee.

Shri Jatinder Mohan, Scientist, NML, Jamshedpur—Member (i) Blast Furnace Coke Sub-Committee, (ii) Foundry and Coke Sub-Committee, and (iii) Chemical Coke Sub-Committee.

Sarvashri D.R. Narahari & G.S. Jain, Scientists, CBRI, Roorkee—Principal and Alternate Member respectively, Soil Testing Procedure and Equipment Sub-Committee.

Shri K.T. Sarkar & Dr R. Selvaranagan, Scientists, CLRI, Madras — Principal & Alternate Representative respectively of the Institute, Composition of the Textile Mills Leather Articles Sectional Committee.

Deputation

Dr K. Kar, Scientist, CDRI, Lucknow, proceeded to U.K. on

Jan. 22, 1966 for training in the field of Pharmacology under the Colombo Plan.

Honours and Awards

Prof. K.S.G. Doss, Director, CECRI, Karaikudi, has been elected President of the Institution of Chemists (India) for 1966-67.

Dr K. S. Chari, Scientist-in-Charge, CDE Unit, CSIR, New Delhi, who is a Corporate Member of the Institution of Chemical Engineers, London, has been conferred the title 'Chartered Engineer' consequent on the grant of Royal Charter to the Council of Engineering Institutions.

Dr Sachimohan Mukerjee, Scientist-in-charge, IIEM, Calcutta has been conferred the D. Sc. degree of the Calcutta University in recognition of his contributions to Cholera Research.

Shri B. Gopala Krishnamurthy, Scientist, RRL, Hyderabad—Ph.D. (Osmania University); thesis : *Studies in chemistry and utilization of cashewnutshell liquid.*

Shri V.N. Bindal, Scientist, NPL, New Delhi—Ph.D. (Delhi University); thesis : *Studies in acoustical behaviour of granular media, with special reference to sand and soil* (Guide : Dr M. Pancholy).

Shri. R.T. Talwalkar, CDRI, Lucknow—Ph.D. (Bombay University); thesis : *Studies in plant phosphatides* (Guide : Dr C.R. Krishna Murthi).

Smt. Sujata Ghosh Dastidar, IIEM, Calcutta—D. Phil. (Bombay University); thesis : *The bimorphism of Candida.*

Shri M.A. Sivasamban, Scientist, RRL, Hyderabad—Ph.D. (Osmania University); thesis : *Studies on dehydrated castor oil.*

Shri J.S. Tandon, CDRI, Lucknow—Ph. D. (Lucknow University); thesis : *The chemical investigation of Indian medicinal plants.*

(*Contd from p. 1 col. 3*)

to that of imported ones. The main features of the leather are, dry feel with sufficient degree of softness, good tensile strength and abrasion resistance. The know-how for commercial production has been given to the interested parties and it is expected to save foreign exchange by import substitution.

PATENTS

Filed

101928 : *Electrolytic recovery of tin metal from the acid detinning bath*—P.B. Mathur, R.L. Seth & N. Venkatakrishnan, CECRI, Karaikudi.

102100 : *Improvements in or relating to lacquers for corrosion prevention*—M. Sundaram, N. Subramanyan, K.S. Rajagopalan, K.S.G. Doss, CECRI, Karaikudi.

103065 : *A scheme for fabricating braced domes with a minimum number of members of different lengths and means of connecting them* —B.Y. Ballal, E.A. Karim, M. Ramaiah, Z. George & G.S. Ramaswamy, SERC, Roorkee.

103066 : *N-substituted anthranilic acids of pharmacological interest* —S.R. Hashim, P.B. Sattur & G.S. Sidhu, RRL, Hyderabad.

103067 : *Improvements in or relating to the electrolytic preparation of perchlorates*—H.V.K. Udupa, S. Sampath, K.C. Narasimham, M. Nagalingam, CECRI, Karaikudi, C.J. Raju (Fertilizer Corporation of India) & P.P. Govinda Rao (Madras Rubber Factory).

103068 : *A new design of a sky scanner for continuously recording the brightness*—S.R. Das & V.D.P. Sastry, NPL, New Delhi.

103069 : *Improvements in or relating to adjustable slit system for optical apparatus*—S.R. Das & S. Parthasarathi, NPL, New Delhi.

103093 : *A process for the preparation of 2 : 3-diphenylindoles of biological interest*—R.N. Iyer, R. Gopalchari, V.P. Khamboj & A.B. Kar, CDRI, Lucknow.

103114 : *Amino-substituted benzocycloheptenols*—J.M. Khanna & Nitya Anand, CDRI, Lucknow.

103115 : *Photographic enlarger timber uses hard tube*—S. Dasgupta, P.K. Basu, CMERI, Durgapur.

103201 : *A new method for manufacturing piezoelectrics and a new piezoelectric material with improved characteristics* — T.V. Ramamurti, C.V. Ganapathy, T.R. Menon & N. Narayanaswamy, NPL, New Delhi.

103214 : *Mechanical load cell using lever and dial gauge*—Bhagwant Singh, CMRS, Dhanbad.

103215 : *Preparation of a synthetic tanning material for white tannage* D. Mukherjee, K.T. Sarkar & Y. Nayudamma, CLRI, Madras.

103216 : *Improvements in or relating to leclanche type dry cells*—M.G. Potdar, H.V.K. Udupa & K.S.G. Doss, CECRI, Karakudi.

U.S.A.

491160 : *Carbon electrodes for use in air depolarized cells*—A.K. Abdul Waheed, K.V.N. Rao & K.S.G. Doss, CECRI, Karaikudi.

Sealed

86541 : *A reactor for carrying out highly exothermic and explosive reactions particularly suited for chlorination of methane*—S.P. Mukherjee, A.D. Deshpande, G.V. Potnis & M.U. Pai, NCL, Poona.

87529 : *A process for separation and isolation of lecithin for* Pithecolobium dulce *seed*—S.K. Nigam, C. Mitra & K.N. Kaul, NBG, Lucknow.

87815 : *A process for the manufacture of strapping tapes which can be used as a substitute for steel straps for boxes, bales and similar packages*—P. Veerraju, B. Anandaswamy, N.V.R. Iyengar & A. Sreenivasan, CFTRI, Mysore.

Germany

1196633 : *A process for the preparation of azalaic acid semi-ester suitable for making civetone decarboxylic acids*—U.G. Nayak, K.K. Chakravarti & S.C. Bhattacharyya, NCL, Poona.

U.K.

989802 : *Improvements in or relating to the modification of aluminium alloys containing silicon*—S.S. Bhatnagar, P.K. Gupte, B.R. Nijhawan & G.G. Nair, NML, Jamshedpur.

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MYSORE

MERDO Centre at Madras

A new centre of the Mechanical Engineering Development Organisation has started functioning at Engineering College Buildings, Guindy Madras, with effect from Jan. 20, 1966. This is the third in series of ten such centres planned by CMERI, Durgapur for the purpose of rendering technical assistance to the industries in the country. The other two centres, commissioned earlier, are functioning in Poona and Ludhiana.

Exhibition of Indian Scientific and Technical Publications

The Publications and Information Directorate, New Delhi organised an Exhibition of Scientific and Technical Publications brought out in the country from 1960-65 at All India Fine Arts & Crafts Society Buildings (AIFACS), New Delhi. This is the second such exhibition; the first was organised in 1960. The exhibition was inaugurated by Dr Zakir Husain, Vice-President of India on Feb. 15, 1966. Shri M.C. Chagla Union Minister of Education and Vice-President of CSIR, and Dr S. Husain Zaheer, DGSIR were also present at the inaugural ceremony. In all, 5260 publications were displayed, of which 4,492 were books and 768 periodicals and reports.

A statistical analysis of the publications displayed shows that the largest number of books published in India is in English, 57.2 percent. Hindi publications represent 15.4, Marathi 4.7, Bengali 4.5, Tamil 4.2, Gujarati 3.6 per cent. The percentages of books in other languages stand below 3. In English, the largest number of books pertains to engineering subjects (475); but the maximum number of books in Bengali, Gujarati, Hindi, Malayalam, Marathi, Sanskrit, Tamil, Telugu and Urdu relate to medical sciences. About 91.1 per cent of the periodicals are published in English whereas in Hindi it is only 4.8 per cent.

The Exhibition lasted from Feb. 15 to Feb. 27, 1966. A bibliography of the publications displayed at the exhibition has also been brought out.

AIFACS, New Delhi—Dr Zakir Husain (*fourth from right*) Shri M.C. Chagla (*left*) Dr S. Husain Zaheer (*third from right*), and Shri S.B. Deshaprabhu (*right*) during inauguration of the Exhibition.

RESEARCH PROGRESS

CGCRI, CALCUTTA

Spectroscopic Studies of some Clay Minerals—Investigations were carried out on infrared absorption spectra (obtained by using KBr disc method) of some principal clay minerals and mica type structures. The studies helped in characterization of different minerals. Distinction between sillimanite and mullite which has been difficult because of closeness of their optical properties and X-ray diffraction pattern, can now easily be made on the basis of their infrared absorption spectra. In alumino-silicate structures, replacement of Al^{+3} by cations of larger tonic radii gave rise to reduction in number of absorption bands and also a shift in principal band due to Si-O linkage towards larger wave length, suggesting thereby the possibilities of studying the extent and type of isomorphic substitution in octahedral/tetrahedral layers of the structures.

Studies on Fireclays for Refractories—Investigations were carried out on fourteen clay samples from Bihar, Madhya Pradesh, Uttar Pradesh, Madras, Rajasthan and Orissa, with a view to ascertaining their properties and the scope for their utilisation in making fireclay refractories. Results indicated that high heat duty refractories could be produced by proper combination of grog from non-plastic clays of high

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BRIEFS

Directorate of Scientific and Technical Personnel

The National Register of Scientific and Technical Personnel and Scientists' Pool Unit has become a Directorate with an Executive Council of its own, consequent on the decisions of the Governing Body of CSIR. The Directorate will be in the charge of Shri K. Ray, Scientist-in-charge of the existing Unit. He will exercise the powers of a Director. The Directorate will continue to be housed in the CSIR Secretariat Buildings.

CECRI Annual Report, 1964-65

The Annual Report of CECRI, Karaikudi for the year 1964-65 has been published. Highlighting the main achievements of the work done in a brief introduction, the report (pp. v+93) reviews the research activities of the Institute under the heads: Electrothermics and fused salt electrolysis; Electrowinning and electrodeposition; In-organic chemicals; Electro-organic preparations; Lead dioxide electrodes; Batteries; Anodization; Corrosion, etc. Besides, it includes information on other activities such as industrial liaison, exhibitions, seminars, symposia colloquia, patents, miscellaneous items fabricated, and publications.

CBRI, Roorkee

Dr Sampooran Singh, Director, Terminal Ballistic Research Laboratory, Chandigarh, gave a lecture on 'Damage by high explosive bombs' at CBRI, Roorkee, on Jan. 21, 1966. The Lecture was highly appreciated by a large gathering from the Institute, Roorkee University, Structural Engineering Research Centre and other local institutions.

CBRI Open Day

The Central Building Research Institute, Roorkee, observed its Annual Open Day on Feb. 11, 1966. Some 800 visitors including students, engineers, builders and architects visited the museum and laboratories of the Institute and evinced keen interest in the work being carried out. Technical film shows and demonstrations of new constructional techniques developed at the Institute were arranged. A brochure was also issued on this occasion.

Symposium on CNS Drugs

A symposium on Central Nervous System (CNS) Drugs was organised at RRL, Hyderabad, during Jan 24-29, 1966. Inaugurated by Dr S. Husain Zaheer, DGSIR, the symposium was attended by some 120 scientists from India and abroad. Among the distinguished foreign scientists who attended the symposium were Prof. H. L. Borison of Dartmouth Medical School, New Hampshire, U.S.A., Dr E.L. May from National Institute of Health, Maryland, U.S.A., Prof. G. Fodor, University Laval, Quebec, Canada. Prof. G. Schenck, Institute of Pharmaceutical Chemistry, Free University of Berlin, and Dr L. H. Sternbach from Hoffmann La Roche Inc., New Jersey, U.S.A.

In all, thirty research papers were presented. The discussions covered the following aspects of CNS drugs: synthesis, chemical structure and structure-activity relationship of the CNS drugs, theories on the mechanism of action of the drugs, physiological transport of drugs in the central nervous system, localisation of the drugs in the brain and metabolic transformation of the drugs.

Also, two popular science lectures were arranged during the symposium—(i) "Analgesics & drug dependence" by Dr E.L. May, (ii) "Body temperature regulation", by Dr H.L. Borison.

Symposium

A symposium on 'Problems of Energy Supply in India during the Fourth Five-Year-Plan' was organised at CFRI, Jealgora during Feb. 4-5, 1966. In all, 22 papers, divided into the following six groupheads were presented in two technical sessions :

(i) General assessment, overall problems of production, preparation, generation and distribution of energy; (ii) Coal preparation ; (iii) Carbonisation; (iv) Energy for Iron & Steel industry ; (v) Oil and gas ; (vi) Coal based industrial complex.

Training Course at CFTRI

A seven-week short term training course in Food & Vegetable Technology commenced at CFTRI, Mysore, on Feb. 7, 1966. Thirteen candidates from Cambodia, Ceylon, Japan, Malaysia, Nepal, Phillipines, Thailand, Vietnam and South Korea, joined the course under the sponsorship of FAO International Food Technology Training Centre. Besides,

RRL, Hyderabad—(*from left to right*) Dr J.R. Boissier presiding over one of the sessions of the CNS Drugs Symposium. Also seen in the picture are Dr E. Testa, Dr S. Husain Zaheer, Dr G.S. Sidhu and Dr P.B. Bradley.

seventeen candidates from different parts of India have also been admitted.

Training Course in Oceanography

The National Institute of Oceanography, CSIR, in co-sponsorship with Unesco organised a training course in Oceanography which was formally declared open in Bombay by Dr P.V. Cherian, Governor of Maharastra, on Jan. 21, 1966.

Twenty-five trainees from India, Thailand, Malaysia, Singapore and Ceylon, joined the course. The course consists in a three-week intensive training programme in ocean research, followed by specialization studies in physical, chemical, biological and geological oceanography.

The course is directed by Dr. N.K. Panikkar Director, National Institute of Oceanography, in association with Dr David A. Mc Gill, Woods Hole Oceanographic Institution, U.S.A., Dr R. Fisher, Scripps Institute of Oceanography, USA, is one of the professors giving specialized course in geological oceanography.

International Leather Fair—1966

A one-week International Leather Fair was organised at Madras during Jan. 31—Feb. 6, 1966 under the joint auspices of the Central Leather Research Institute, Madras and the Leather Fair Society. The Fair, inaugurated by Shri K. Kamaraj, President of All India Congress Committee, on Jan. 31, 1966, was participated by a number of firms from different countries.

A novel feature of this year's celebrations was the leather Fashion Parade organised by the Leather Fair Society to mark the inauguration. Several items of footwear, garments and other leather articles were displayed.

Tanners' Get-Together, 1966

As an annual feature, the Central Leather Research Institute, Madras, organised a get-together of tanners during Jan. 31-Feb. 4, 1966. Tanners from rural tanning centres also participated. The Get-together, inaugurated by Dr. A. Lakshmanaswamy Mudaliar, Vice-Chancellor of Madras University, was spread over four technical sessions: (i) Heavy leather (ii) Chrome tanning; (iii) Village tanning techniques; and (iv) Role of leather industry in the present emergency. Papers dealing with various aspects of leather manufacture were presented.

A refresher course for the staff of small industries service institutes, was also inaugurated. The inauguration ceremony was performed by Shri Bhaktavatsalam, Chief Minister of Madras. Shri R. Venkataraman, Minister for Industries and Commerce, Madras presided on this occasion.

STAFF NEWS

Appointments

Sarvashri K. Sen (Nov. 15, 1965), V. Kalyanaraman (Nov. 25, 1965), C.P. Srivastava (Dec. 2, 1965) K.S. Rajagopalan (Jan. 15, 1966), Scientists, CMERI, Durgapur.

Sarvashri K. Sridhara (Dec. 1, 1965) S. Radhakrishnan (Dec. 3, 1965), Scientists; R. Gopinath (Dec. 23, 1965) & P. Krishnamurthi (Jan. 1, 1966), Pool Officers, NAL, Bangalore.

Sarvashri V. Sanjeeva Rao, B.C. Mohanty, Dr S.S. Dara, & Dr (Smt.) K.K. Saroj (Jan. 1, 1966) K.L. Ghosh (Jan. 31, 1966) & R.C. Kar (Feb. 1, 1966) Scientists; V. Subba Rao, Plant Engineer (Jan. 28, 1966), RRL, Bhubaneswar.

Dr P. Suryanarayana Rao, Pool Officer, CFTRI, Mysore (Feb. 7, 1966).

Shri K. C. Madan, Scientist, CD & EO, CSIR, New Delhi (Feb. 8, 1966).

Resignations

Shri V. Swaminathan, Scientist, CBRI, Roorkee (Nov. 20, 1965).

Dr O.P. Srivastava, Scientist, CMERI, Durgapur (Oct. 20, 1965).

Shri Harbans Lal, Scientist, CMERI, Durgapur (Nov. 10, 1965).

Deputations

Shri B. Satyanarayana, Scientist, NAL, Bangalore, resumed duty on Jan. 3, 1966 after completing his training in the Royal Aircraft Establishment, U.K. under the Colombo plan.

Sarvashri A. Krishnan & S. Nagabhushana, Scientists, NAL, Bangalore proceeded to Canada on Feb. 8, 1966 in connection with the design, manufacture and supply of the Data Acquisition system for the 4′×4′ trisonic Wind Tunnel.

ISI Nominations

Sarvashri R. Selvarangan, P.S. Venkatachalam, & T.S.K. Mahadevan, CLRI, Madras—Principal, Vice, and Alternate Representatives respectively, Leather Articles for Looms Sub Committee.

CLRI, Madras—Decorated Entrance of the International Leather Fair

Visitors

SIR DAVID CUTHBERTSON, Royal Infirmary, Glasgow, England, visited CFTRI, Mysore on Jan. 18, 1966 and gave an address on 'The work of Rowett Research Institute in Nutrition'.

DR K.H. GINZEL of Riker Laboratories, USA, visited CDRI, Lucknow on Jan. 19, 1966 and delivered a lecture on 'Centrally acting muscle-relaxing agents'.

DR EDNA RAMSEYER KAUFMAN Ohio State University, Agricultural Education & Research Mission to India, visited CFTRI, Mysore, on Jan. 24, 1966.

DR NEVIN S. SCRIMSHAW, Professor of Nutrition, Massachusetts Institute of Technology, Cambridge, USA, visited CFTRI, Mysore on Jan. 29, 1966.

MR G. K. PARMAN, National Academy of Sciences, National Research Council, Washington, USA visited CFTRI, Mysore on Jan. 29, 1966.

PATENTS

Filed

103217: *Improvement in or relating to preparation of 3,3-bischoloromethyl oxa-cyclobutane*—Devendra Jain, M. Krishnan and R.T. Thampy, SRIFIR, Delhi.

Accepted

92526: *Improvements in or relating to pitch mastic compositions*—C.G. Swaminathan, B.C. Mazumdar, & B.S. Mongia, CRRI, New Delhi.

Sealed

85789: *Utilization of groundnut shells for the manufacture of high alpha-cellulose dissolving grade pulp*—G. M. Vyas, D.S. Bandale, M.B. Mahajan, J.L. Bose, B.D. Modi, H.R. Sonawane & D.C. Bigg, NCL Poona.

86638: *A process for the preparation of 2-isopropenyl hexanols*—Suryakumari Ramaswami, S.K. Ramaswami & S.C. Bhattacharyya, NCL, Poona.

87816: *A device for constant current supply in electrophoresis*—A. Kumar, P.D. Bhatnagar & A.K. Bhattacharya, Agra College, Agra.

87958: *Manufacture of expansion joint filler boards for concrete roads, runways and bridge decks, insulation boards and building boards from coconut pith*—T.N. Sharma, M.L. Puri & K.L. Sethi, CRRI, New Delhi.

86991; *Preparation of polyurethane printing rollers*—N.D. Ghatge and S.L. Kapur, NCL, Poona

87993: *Improvements in or relating to soft ferrites*—T.V. Ramamurti, S.V. Ganapathy, R. Krishnan, Aftab Ahmed & G. Govindaswamy, NPL, New Delhi.

Research Progress

(Contd from p. 1, col. 3)

pyrometric cone equivalent value and raw clays with good plasticity and high refractoriness. The grog should preferably have angular grains and low porosity and grain size distribution thereof should be such as to give the maximum packing density in the mixture of grog with the plastic clay. For obtaining high strength, good refractoriness, underload and good volume stability, the bricks should be well pressed at a pressure of atleast 1.5 tons per sq. in. and fired at a temperature of not less than 1350°C.

CEERI, PILANI

Transistorized Servo-Operated Pen Recorder—Design and development of a transistorized servo-operated pen recorder has been completed. The prototype unit which is basically a position control servomechanism, can be used for recording various types of electrical or non-electrical quantities with the help of suitable transducers.

The unit having five different speeds to have clarity of record for the whole bandwidth meets the following specifications: Bandwidth, 0. 3c/s.—30c/s.; Sensitivity, 20mV./mm.; Rise time for step response, 0.025s.; Overshoot, less than 6 per cent.

NOTIFICATION

It is proposed to appoint a Director for the Central Indian Medicinal Plants Organisation, Lucknow. The Director is expected to guide and supervise the activities of the Organisation which mainly consist in:

(i) evolving and laying down the standards for the plant drugs;
(ii) developing intensive cultivation of medicinal plants, indigenous as well as exotic under different regional conditions;
(iii) serving as a plant introducing centre for such medicinal plants as are of great economic importance; and
(iv) carrying out a survey of the medicinal plant resources of the country.

There is no standard form of application. Those who wish to be considered are invited to send a statement to the Director-General, Scientific and Industrial Research. Others who may wish to send nominations for the post may kindly forward their proposals to the Director-General.

All communications will be treated confidentially. Statements and proposals should be received by the Director-General on or before April 15, 1966 at the office of the Council of Scientific & Industrial Research, Rafi Marg, New Delhi-1.

CSIR SCHOLARSHIPS

Applications are invited for the award of ten Scholarships to young Indian Scientists for study/training/research abroad in certain specialized fields of Science, engineering or technology for which no facilities are available in India.

These scholarships will be awarded for a period of two years in the first instance but may be extended for another year or so.

Applicants should possess a first class Master's Degree in Science or a first class Degree in Engineering or Technology, and should ordinarily be between 20 and 30 years of age.

The selected candidates will have to execute a Bond to serve the CSIR or a scientific Institution in India, duly approved by the CSIR for a minimum period of three years after the completion of the tenure of Scholarship.

Rates of stipend, allowance etc., permissible in the various foreign countries, travelling expenses and other particulars and application forms may be obtained from the Secretary, Council of Scientific and Industrial Research, Rafi Marg, New Delhi-1.

Application in the prescribed form must be submitted together with crossed Indian Postal Order for Rs 7.50 (Rs. 1.87 for Scheduled castes/Scheduled Tribes) drawn in favour of the Secretary, Council of Scientific & Industrial Research, New Delhi as application fee.

Last date for the receipt of applications is March 19, 1966.

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RN 4212/5

CSIR NEWS

VOL. 16 MARCH 15, 1966 : PHALGUN 24, 1887 NO. 5

Governing Body and Board Meetings

Meetings of the Board of Scientific and Industrial Research and the Governing Body will be held at the Conference Room of the Ministry of External Affairs, South Block, New Delhi on April 15 & 16, 1966 respectively at 9-30 a.m. on both the days. Smt. Indira Gandhi, Prime Minister and President, CSIR, will preside.

The Society of the CSIR will be meeting immediately after the meeting of Governing Body on April 16, 1966.

A meeting of the Committee of the Board will be held at CSIR Secretariat, New Delhi on April 14, 1966 at 11.30 a.m.

Indo-Hungarian Cultural Exchange Programme, 1965-67

The Council of Scientific & Industrial Research and the Institute of Cultural Relations of the Hungarian People's Republic have signed an agreement for scientific cooperation and promotion and expansion of scientific and technical relations for the period 1965-67. The salient features of cooperation envisaged are: (i) exchange of three-member scientists delegation in 1966 to explore those fields of research in pure and applied sciences which may be of mutual interest or may promote technical development of either country; (ii) guaranteeing of two or three places for research in 1966 for a period of not less than 3 months in specially defined subjects and suggestion of extension of relations and even direct cooperation of individual institutes; (iii) exchange of outstanding scientists for giving lectures and for familiarising themselves with the scientific work in each other's country; (iv) keeping each other informed of the theme of international scientific conferences and symposia to be held in the two countries; (v) establishing direct contacts between the Indian National Scientific Documentation Centre and Hungarian Central Technical Library and Documentation Centre; (vi) exchange of bibliography publications, documentation materials, photo copies and microfilm copies; and (vii) mutual support of the publication and commercial release of scientific and technical books; and (viii) mutual support for the exhibition of scientific and technical films.

The mode of operation of the agreement and the conditions of accommodation and allowances for the visiting scientists have also been agreed upon.

14-4-66 LIB.

RESEARCH PROGRESS

NML, JAMSHEDPUR

Flotation Studies on a Copper Ore Sample from Rakha Mines—Investigations were conducted on beneficiation of low-grade copper ore from Rakha mines (Bihar), assaying 2.73 per cent copper, 0.072 per cent nickel, 0,025 per cent molybdenum, 0.02 per cent cobalt, 73.08 per cent silica, 5.54 per cent iron and 3.96 per cent sulphur. This investigation is one of the series of beneficiation studies taken up on copper ore deposits in India, i.e. at Khetri, Kolihan and Rakha areas as referred by the National Mineral Development Corporation Ltd. The chief copper mineral of Rakha ore was found to be chalcopyrite which was liberated from siliceous gangue at about 100 mesh size. Optimum conditions for rougher flotation of copper were determined by varying feed fineness, *p*H, frother and collectors. Satisfactory results were obtained when roughing was done using K.E. xanthate and pine oil at a *p*H of 8.8, with flotation feed having 54.8 per cent—200 mesh. The float assayed 24.31 per cent copper and a recovery of 96.9 per cent copper could be achieved. Since the copper minerals exhibited natural flotability, pine oil alone was sufficient to float the copper minerals and xanthate addition was necessary only during the last stage of flotation. The rougher float obtained under these conditions assayed 24.25 per cent copper with a recovery of 97.6 per cent.

Reflotation of the rougher float after grinding to —150 mesh size yielded a refloat copper concentrate assaying 30.1 per cent copper with a recovery of 91.0 per cent.

A molybdenum concentrate assaying 35.9 per cent molybdenum (60.0 per cent MoS_2) with a recovery of 68.4 per cent molybdenum was obtained as a valuable by-product from the copper concentrate by the use of depressants for chalcopyrite. It is expected that further cleanings of the molybdenum float and return of the middling products to the circuit would improve the results further.

CGCRI, CALCUTTA

Production of High Density Grinding Medium—Investigations were carried out with a view to developing process for production of a high density grinding medium from readily available indigenous raw materials like alumina and zircon by firing at a comparatively low temperature. Results indicated that vitrified high density (3.5-3.7) grinding medium could be made from alumina and zircon by firing (in the existing ceramic kilns without making any drastic change) at 1400°C. with a soaking period of 6 hr.

For maturing of alumina based bodies at the lower temperatures titania was found to be an essential ingredient. Addition of a small amount of zircon increased the density of such bodies. Pre-calcination

(Contd. on p. 4, col. 2)

BRIEFS

Research Survey and Planning Organization

Consequent on the decisions of the Governing Body of CSIR, the Survey & Planning of Scientific Research Unit along with the International Scientific Collaboration Bureau, C S I R Secretariat, New Delhi, has been formed into a separate Organization with an Executive Council of its own to guide and manage its activities. The Organization will consist of the following three units: Survey and Planning; Operational Research; and International Scientific Collaboration Bureau. Shri A. Rahman, Scientist-in-charge of the Unit will be Incharge of the Organization and will exercise the powers of a Director. The Organization will continue to be housed for the present at CSIR Secretariat Building, New Delhi.

CPHERI Annual Report, 1964-65

The Annual Report of CPHERI, Nagpur for the year 1964-65 has been published. The report (pp. 92) covers in detail the progress of research activities under the project heads: water quality criteria, water works and treatment, water distribution, sewage characterization, water pollution and stream sanitation, industrial waste treatments, sewage systems, sewage treatment process and rural sanitation. Information on other items such as pilot plants, instrumentation service, scrutiny and design, extension service, and symposia and seminars, has also been included. The appendices include information on administrative activities of the Institute.

Bibliography

A bibliography of the publications displayed at the Exhibition of Indian Scientific & Technical Publications (*CSIR News*, Vol. 16, No. 4, p.1.) has been brought out by the Publications and Information Directorate, New Delhi. The bibliograghy (pp. xii+284) enumerates 4,492 books and 768 periodicals and reports published in India during 1960-65. The books are arranged in a classified sequence according to the Dewey Decimal Classification; the language symbols being given at the end of each entry. Titles of books in Indian languages and names of Indian authors are transliterated into Roman script with diacritical marks wherever necessary. The entries relating to periodicals have been rehearsed alphabetically in a separate section. The publication also includes an author index, subject index and a list of Indian publishers along with their addresses.

CSIO Training Course

A three-week training course in Testing and Use of Optical Instruments was organised at CSIO, Chandigarh during Feb. 7-26, 1966. The course included theoretical as well as practical training in the study, use, testing and repair of various optical instruments like microscopes, dumpy level, theodolites, refractometer, photomicrographic camera, projectors, polarimeter, colorimeter and saccharimeter. Six persons deputed from various agricultural and veterinary colleges/universities attended the course.

CECRI Refresher Courses

The Central Electrochemical Research Institute, Karaikudi will be conducting the following refresher courses ranging from a period of 4 to 12 weeks during the months June-November, 1966: (i) Storage Batteries Technology; (ii) Corrosion and its prevention; (iii) Electroplating. The minimum qualification for admission to the courses is a Bachelor's degree in chemistry, physics, metallurgy or engineering. The fee for each course per candidate is Rs 100. Preference will be given to candidates sponsored by their employers. Prospectus and application forms may be had from the Director, CECRI, Karaikudi-3, on remittance of Re 1 by money order for each course.

SASMIRA, Bombay

As a part of the India Productivity Year, the Silk and Art Silk Mills' Research Association and the Bombay Productivity Council have jointly organised an Appreciation Course in Inventory Control & Stores Management. The object of the Course is to explain the scientific principles of the stores management and inventory control with particular reference to the textile industry. The course will commence on April 18, 1966.

NML, Jamshedpur

The Project report prepared by the Russians for the Bokaro Steel Plant has acclaimed the thoroughness with which the work was conducted by the National Metallurgical Laboratory on Kiribiru iron ores for this Plant—its beneficiation, agglomeration and sintering. The results of the work on the subject and their recommendations are being implemented in the project.

The work of NML in this field has saved considerable foreign exchange expenditure which otherwise would have been incurred in conducting these research investigations and pilot plant trials in the Soviet Union.

Collaboration with Universities

Dr P.K.K. Nair, Scientist, NBG, Lucknow, delivered a course of lectures on 'Palynology' at the Department of Botany, Nagpur University, Nagpur (Jan. 18-20, 1966).

Dr A.B. Biswas, Scientist, NCL, Poona, delivered a series of lectures on 'Methods of determining molecular structures,' at Shivaji University, Kolhapur (Jan. 21 & 22, 1966).

Dr S.L. Kapur Scientist NCL, Poona, gave a lecture on 'Recent developments in plastics' at the University College of Agriculture, Trivandrum (Feb. 20,1966).

Dr H.B. Mathur, Scientist, NCL, Poona, gave a lecture on 'Nuclear resonance absorption and its applications in chemistry' at University of Delhi, Delhi, (Feb. 21, 1966).

Dr A. Goswami, Scientist, NCL, Poona gave a lecture on 'Physics of thin films' at NPL. New Delhi, and CEERI, Pilani (Feb. 24 to March 1, 1966).

Dr M. Santappa, Professor of Physical Chemistry, University of Madras, delivered a series of lectures on Basic Sciences at CLRI, Madras (Feb. 21 to March 11,1966.)

STAFF NEWS

Appointments

Dr B.S. Rathore, Pool Officer, NCL, Poona (Jan. 20, 1966).

Dr (Km.) Kamla Goyal, Pool Officer, CFTRI, Mysore (Feb. 1, 1966).

Dr (Smt.) Nirmal Sethi, Scientist, CDRI, Lucknow (Feb. 16, 1966).

Deputations

Dr B.R. Nijhawan, Director, NML, Jamshedpur, participated as a guest lecturer, on invitation from U.N. Bureau of Technical Assistance Operations on Hand-sorting and Mechanical Packing, at the Inter-regional Seminar on 'Ore Concentration in Water-Short Areas' held at U.N. Headquarters in New York, during Feb. 14-25, 1966.

Shri P. S. Kulkarni, NCL, Poona proceeded to Australia on Jan. 3, 1966 for 6 months' training in Mass Spectrometry at the Coal Research Station, Sydney.

Shri P.N. Saxena, NBG, Lucknow, resumed duty on March 1, 1966 after completing his studies in Algology at the Lenin State University, Tashkent, USSR, for a period of 3 years and 4 months. He also worked at the Komarov Institute of Botany, USSR Academy of Sciences, Leningrad and was awarded the degree of Doctor of Philosophy (Natural Sciences) for his thesis, Algal flora of fish-breeding ponds with reference to increasing fish production.

Nominations

Dr A. Lahiri, Director, CFRI, Jealgora—Secretary-Convener, Sectional Committee on Energy and Technology, National Institute of Sciences of India, for the years 1966 and 1967.

Dr M.C. Srinivasan, NCL, Poona—Consultant, Western Zone of the Indian Phyto-pathalogical Society.

Dr K.T. Achaya, Scientist, RRL, Hyderabad—Member, Governing Board of Hyderabad Science Society, Hyderabad.

ISI Nominations

Prof. Dinesh Mohan, Director, CBRI, Roorkee—Representative, Civil Engineering Division Council.

Dr S.S. Bhatnagar, Scientist, NML, Jamshedpur—Member, Hospital Utensils Sub-Committee.

Shri R.M. Krishnan, Scientist, NML, Jamshedpur—Member, Foundry Sectional Committee.

Dr A.B. Chatterjea & Shri K.N. Gupta, Scientists, NML, Jamshedpur—Chairman and Member respectively, Pig Iron Sectional Committee.

Shri P.P. Bhatnagar, Scientist, NML, Jamshedpur—Member, Ferro-alloys Sectional Committee.

Honours & Awards

Dr R.L. Datta, CSMCRI, Bhavnagar, who is a Corporate Member of the Institution of Chemical Engineers, London, has been conferred the title 'Chartered Engineer' consequent on the grant of Royal Charter to the Council of Engineering Institutions.

Dr K.T. Achaya, Scientist, RRL, Hyderabad, has been awarded the Jaipuria Gold Medal of the Oil Technologists Association of India for the best paper published in the Association's journal during 1964.

Shri E.V. Rajan, NCL, Poona—Ph. D. (Poona University); thesis : *Studies in the interaction of metal ions with amino acids and related compounds* (Guide : Dr H.B. Mathur)

Shri N.P. Damodaran, NCL, Poona—Ph. D. (Poona University) thesis : *Studies in sesquiterpenes* (Guide : Dr Sukh Dev)

Visitors

Shri Siriwardene, Head of the Department of Metallurgy of the University of Colombo, Ceylon, visited NML, Jamshedpur on Jan. 21, 1966.

Prof. Lumir Sommer of the University of Brno, Brno, Czechoslovakia visited CGCRI, Calcutta on Jan. 29, 1966.

Dr G. Fodor, Professor of Organic Chemistry, Universite Laval, Faculte Des Sciences, Quebec, Canada, visited CDRI, Lucknow during Feb. 4-5, 1966.

Dr (Mrs) M. Protiva, Head of the Chemical Division, Pharmaceutical and Biochemical Research Institute, Prague, Czechoslovakia, visited CDRI, Lucknow on Feb. 5-6, 1966.

Dr G.J. Chamberlain, Managing Director, Tintometer Ltd, Salisbury, England, visited CFTRI, Mysore on Feb. 7, 1966 and delivered a lecture on 'Colour and its measurement'.

Dr B.V. Shetty, Head of the Organic Chemistry Department, Strasenburgh Laboratories, Rochester, New York, visited CFTRI, Mysore on Feb. 7, 1966.

Dr M. Yukowa, Vice-President, Yawata Iron & Steel Co. Ltd, Tokyo, Japan, visited NML, Jamshedpur on Feb. 7, 1966.

Dr Marizo Ishidate, Director, National Institute of Hygiene Sciences, Tokyo visited CDRI, Lucknow on Feb. 9, 1966.

Prof. Y.P. Filimonov, Unesco expert and specialist in furnace design, visited NML, Jamshedpur on Feb. 10, 1966 and gave a talk on 'Application of theory of similarity for investigation of gas movement in industrial furnaces'.

Dr R.H. Thompson, National Institute of Health, USA, visited CDRI, Lucknow on Feb. 14, 1966.

Mr A.K. Robertson, Ministry of Overseas Development, U.K., and Mr S.N. Simms of the Office of the British Deputy High Commissioner, Calcutta visited CMRS, Dhanbad on Feb. 17, 1966.

Dr Rodrigues, Professor of Home Science and Applied Nutrition, M.S. University of Baroda, visited CFTRI, Mysore, on Feb. 17, 1966 and delivered a lecture on 'Nutritional studies in an Indian village'.

Mr Joseph A. Patterson, Director of American Association of Museums, USA, visited BITM, Calcutta on Feb. 20, 1966.

Drs V.A. Ogarev & B.G. Erchov of the Institute of Physical Chemistry, Academy of Science, Moscow, visited CFTRI, Mysore on Feb. 21, 1966.

Drs I.A. Gubanov, A.S. Gladkih & I.M. Rabindovich, Scientists, Vilar Institute for Medicinal Plants, Moscow, visited CDRI, Lucknow on Feb. 28 and March 1, 1966.

PATENTS

Filed

103959 : *Improvements in and relating to the manufacture of bonded abrasive wheels and shapes*—B. Bhushan & S. Sen, CGCRI, Calcutta.

103970 : *Improvements in or relating to direct plating of copper on aluminium*—B.A. Shenoi, R. Subramanian & S. Seetharaman, CECRI, Karaikudi.

103972 : *Improvements in or relating to the fabrication of negative electrode in silver oxide-zinc cells*—P. B. Mathur & N. Karuppannan, CECRI, Karaikudi.

103973 : *A process for the preparation of 4-phenylisoflavan-4-ols and 4-phenylisoflav-3-enes of biological interest*—R. Gopalachari, R.N. Iyer, V.P. Khamboj & A.B. Kar, CDRI, Lucknow.

U.S.A.

500077 : *Vacuum whirler for applying thin and uniform coating of an emulsion on a wafer*—K.S. Balain & I. Singh, CEERI, Pilani.

Accepted

91430 : *Improvements in or relating to manufacture of reconstituted mica*—Atma Ram & S.B. Roy, CGCRI, Calcutta.

92975 : *Improvements in or relating to the isolation of trilaurin or lauric acid from the fruits of Cinnamomum cecidodaphne Meissn*—Akhileshwar Singh, S.N. Srivastava, V.N. Sharma & K.N. Kaul, NBG, Lucknow.

95074 : *A new depolariser mix for use in alkaline primary cells*—M.A.V. Devanathan, N. Ramasamy & S. Venkatesan, CECRI, Karaikudi.

95183 : *A device for the heat treatment of articles*—M.K. Balchandani, V.P. Wasan & T.D. Bansal, NPL, New Delhi.

Sealed

89004 : *A polycrystalline P-N junction photovoltaic solar cell*—A.U. Momin & A.P.B. Sinha, NCL, Poona.

90057 : *Improvements in or relating to electric incandescent filament lamps*—Atma Ram, B. M. Bishui & Jagdish Prasad, CGCRI, Calcutta.

Research Progress

(Contd from p. 1, col. 3)

of alumina reduced the firing shrinkage to a minimum. Lowest shrinkage was obtained with isostatic pressing. De-airing extrusion increased the plastic strength of the bodies. Density of zircon bodies was quite high but the strength was much lower than that of alumina bodies.

CSMCRI, BHAVNAGAR

Moulded Insulations—Magnesia and calcium silicate moulded insulations have been prepared. The former was prepared from magnesium carbonate trihydrate and the latter from calcium silicate in the presence of aluminium ions. The moulded articles are rugged, and durable and can withstand even the most severe operation without crumbling and cracking. They are easy to machine and fix up over the pipelines and equipments in a most tidy way. Magnesia moulded insulation, which can withstand temperatures up to 300°C., finds use in insulation of steam pipes, ovens, boilers, stills, locomotives and in several other operations. The insulation from calcium silicate can be used up to 800°C. and is especially useful for high pressure boilers, furnances, high pressure steam lines and in metallurgical furnances.

NEW PUBLICATION

Indian Scientific and Technical Publications : 1960-1965
A Bibliography

Rehearses 4,492 books and 768 periodicals and reports published in various languages in the country during 1960-65; a subject index, an author index and a list of publishers and their addresses are also included.

Pp. xii + 284 ; Royal 8vo — Price Rs 18.00 ($ 6.00 or 36 s.)

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Publications & Information Directorate, CSIR,
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I, hereby declare that the particulars given above are true to the best of my knowledge and belief.

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CSIR NEWS

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LIBRARY 4-5-66

Summer School

The Central Mining Research Station, Dhanbad is organizing a Summer School on 'Mine Planning' in June 1966, as a measure of collaboration between the national laboratories, universities and mining industry of the country.

The talks at the School, mainly classified into two main sections, Stratified Deposits, and Non-Stratified Deposits (both opencast and underground), will pertain of the following topics : Geological aspects and prospecting, optimum size of mine, opening-up of deposits, surface layout, development, technology of winning, transport, mine environments-ventilation, etc., power supply, and personnel.

A number of professors of mining colleges and eminent engineers from Government departments and mining industry have agreed to deliver lectures in the field of their specialization.

Symposium

A three-day symposium on 'Site Investigations for Foundations' will be held in February 1967 at the Central Building Research Institute, Roorkee. Papers on the following topics are invited for presentation at the symposium : (i) Organization, planning and economics of site investigations; (ii) Methods and extent of investigation (Aerial survey and mapping, geological and geophysical exploration, boring techniques, sampling techniques) ; (iii) In-situ tests (Load tests, penetration tests, field vane shear tests, in-situ moisture density measurements); (iv) Special site investigations for specific purpose (Roads and runways, embankments, machine foundations, nuclear power installations, rocket sites, etc.).

Summary (about 300 words) of the papers may be sent to the Institute before June 30,1966 and the full paper by the end of August 1966.

Further details may be had from Shri P.L.De, General Secretary of the Symposium, Central Building Research Institute, Roorkee.

RESEARCH PROGRESS

NAL, BANGALORE

1-ft × 1-ft Trisonic Wind Tunnel—With the completion of the 1-ft × 1-ft trisonic wind tunnel, the biggest of its kind in the country, a major research facility has been set up for obtaining quantitative data on aerodynamic design aspects at transonic and supersonic speeds. The preliminary blowdown tests to exercise the control valve and to check the tunnel operation control system have been found successful. A programme of tests to establish setting of constants like the gain and time constants and pressure calibration is in progress.

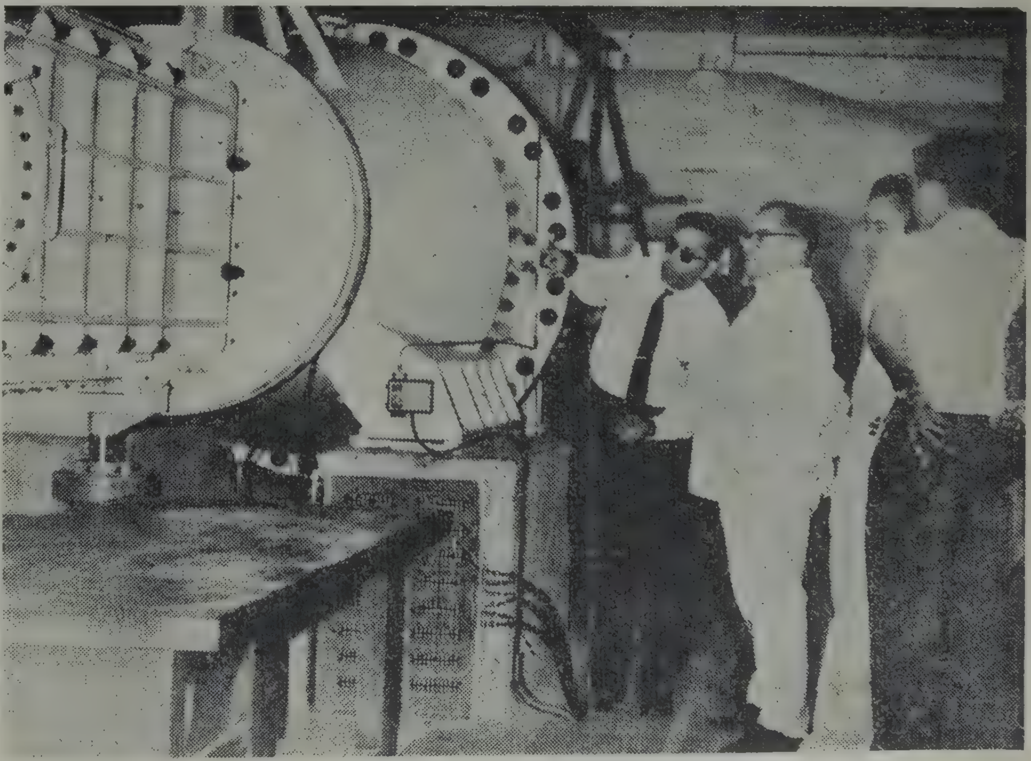
The tunnel with a test section height 1 ft and width 1 ft, covers a Mach number range, 0.5—3.5. It can be operated either from the main air receiver system of NAL (capacity, 100,000 cu. ft) or from the auxiliary air receiver (capacity, 10,000 cu. ft) at a storage pressure of 150 p.s.i.g. The running time ranges from a few seconds to 20 min.

The complete design of the tunnel as well as a number of components requiring high precision has been prepared at the Laboratory.

CBRI, ROORKEE

Wind Tunnel Studies on Building Ventilation—Natural ventilation determines comfort in tropical buildings practicularly during post-monsoon period. Hence, the behaviour of building models with different orientations and window sizes in relation to outdoor prevalent wind velocity was studied in a wind tunnel. The wind tunnel designed, fabricated and installed for the purpose is 5.5 m. long and has a test section of 1.67 m. length, 1.07 m. width and 0.92 m. height, the maximum speed of air in the tunnel being 3 m./sec. Calibration studies of the test section showed the regions of high turbuence and velocity fluctuations. The studies also revealed that the maximum deviation of air velocity from

(*Contd on p. 4 col. 1*)



NAL, Bangalore—Dr S. Husain Zaheer, DGSIR (middle), Dr S. R. Valluri, the Director (left) and Shri K. G. Krishnamurthi, Secretary, CSIR (third from left) at the 1-ft × 1-ft trisonic wind tunnel.

BRIEFS

Seminar

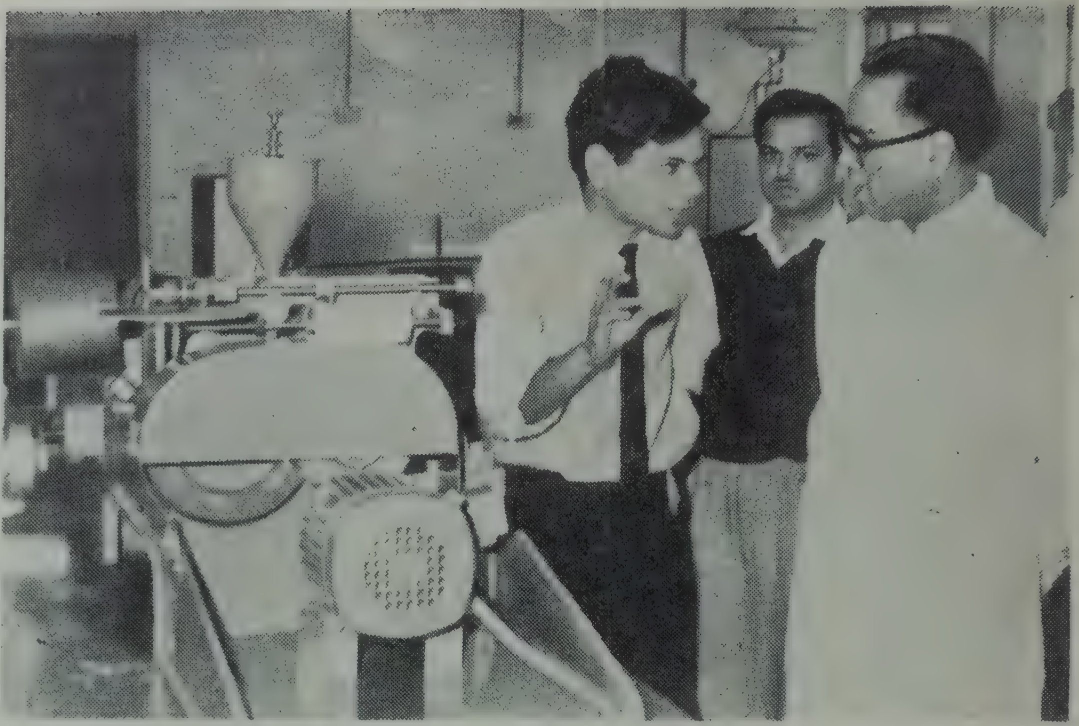
A seminar on 'Hydrogen Production and Utilization in Petroleum Refining and Petrochemical Industry' was organized at IIP, Dehra Dun during March 19-21, 1966. Shri O. V. Alagesan, Minister for Petroleum and Chemicals, inaugurated the seminar which was attended by 137 delegates from different organizations. In all, 30 papers were presented at five technical sessions; (i) Production of hydrogen from oil and gas; (ii) Production of hydrogen from coal and lignite; (iii) Utilization of hydrogen for ammonia manufacture; (iv & v) Utilization of hydrogen in petroleum refining and petrochemical industries.

Following is a summary of the main recommendations and conclusions as presented by Dr M.G. Krishna, Director, at the concluding session of the seminar.

Hydrocarbon feed stocks, liquid and gaseous, should form the main economic raw material for hydrogen manufacture both for producing ammonia, and for petrochemical industries. But, as coal forms an important indigenous source of energy, in the country, efforts to produce ammonia and synthesis gas from coal and lignite should be intensified. Hence processes and technical knowhow should be developed for (i) conversion of liquid and gaseous hydrocarbon feed stocks to hydrogen; (ii) manufacture of catalyst suitable for production of hydrogen starting from gas conversion and purification. Also, intensive collaborative efforts should be made to develop processes or establish plants for utilization of coal and lignite. There is need for evolving methods better than the existing ones for detection of impurities in hydrogen gas feeds. As far as India is concerned, the methods should preferably be based on indigenous resources and not on sophisticated techniques such as gas chromatography.

Intensive techno-economic and process evaluation studies in respect of hydrotreating, hydrodesulphurization and hydrocracking operations under Indian conditions are called for.

It is desirable to continue investigations on coal tar processing under Indian conditions of limited resources, furnace, material, etc. into desirable liquid fuels of proper specifications as it is a project of national importance.



IIP, Dehra Dun—Shri O.V. Alagesan, Union Minister for Petroleum and Chemicals visiting the lubricating laboratory of the Institute

The proceedings have been published in the March 1966 issue of *Chemical Age of India*. Five papers received on the eve of the seminar and the discussions on these papers will be published in the May issue of the Journal.

Rural Housing

A seminar on 'Rural Housing' was organised at CBRI, Roorkee on on March 25, 1966 with a view to discuss certain problems of rural housing which need intensive investigation. In all, 8 papers dealing with different problems confronting rural housing were presented and discussed. About twenty participants took part in the discussions.

Shri D.C. Khanna, Director, Rural Housing Wing, Roorkee, spoke on the various experimental low cost rural houses constructed by the Wing. Prof. B.S. Chandrashekharan, Asst. Professor-cum-Executive Engineer, Rural Housing Wing, School of Planning and Architecture, New Delhi, referred to the ignorance of villagers about the new materials and techniques developed by the research organisations and pleaded for starting of production centres at the village level for various low cost building materials. In his concluding remarks, Prof. Dinesh Mohan, Director, CBRI, promised full cooperation to the Rural Housing Wing in solving problems which need scientific research.

CFRI Foundation Lecture

The Central Fuel Research Institute, Jealgora, organised its Thirteenth Foundation Lecture on April 6, 1966. Dr D.Y. Phadke, Head of the Technical Physics Division, Atomic Energy Establishment, Trombay and Professor of Physics, Tata Institute of Fundamental Research, was invited to speak on 'High temperature plasma and its application to chemical and power technology'.

Dr. D.Y. Phadke

Dr Phadke at the beginning of his lecture lucidly defined the 'Plasma' state as the 'Fourth' state of matter, and distinguished between hot and cold plasmas, the plasma state of the intergalactic space and the plasma state created in the laboratory by thermal ionization of gases.

Dr Phadke stressed that the high range of temperature reached in 'Plasmas' has opened up exciting new fields for endothermic chemical reactions. Chemical processing at temperatures higher than 3000° K., previously thought to be economically infeasible, is now taking definite shape. Thermal ionization at very high temperatures produces enough ion pairs, highly excited atoms and stable or metastable molecular radicals which may react and form new end products.

While referring to the power generation aspects of the plasma jet, in the concluding phase of his lecture, Dr Phadke briefly discussed the advances made in the field of Magnetohydrodynamics (MHD). Intergration of MHD with the conventional thermal power generation methods, he stated, will boost the efficiency of power generation by 10-15 per cent, a considerable gain in coal based thermal power station economics.

At the end of the proceedings Dr J. Choudhury, Director, Bihar Institute of Technology, Sindri, proposed a vote of thanks which was seconded by Dr A. Lahiri, Director, CFRI.

SASMIRA, Bombay

Survey on Warp Knitting Industry—The prevailing conditions of the warp knitting industry in Bombay have been surveyed as the development of industry did not take place in a planned manner.

The survey has shown that the production capacity of the industry has been utilized only to the extent of 50 per cent because of acute shortage and high price of raw material, namely, man-made fibre yarns of right quality. The industry also faces acute difficulties in procuring spare parts for warp kitting machines such as latch, bearded needles as well as guides, and sinkers which are not manufactured in India and are therefore imported. There is therefore an urgent necessity for producing these spares indigenously to meet the needs of the industry.

The survey has also revealed that two types of machines, warp knitting and Raschel looms, are being imported and used by the industry. The production per machine per shift varies considerably from unit to unit and ranges from 30 to 315 m. The average production per machine shift works out to 188.8 m. The production also varies from 12 to 50 m. per kg. of yarn depending on the denier of yarn, number of courses per inch and number of guide bars.

Out of the total consumption of yarn by the units, viscose rayon accounts for 21, nylon for 35 and polyester for 44 per cent. The deniers of viscose rayon yarn used are 120 and 150, of nylon 15, 20, 30 and 40 and of polyester 40, 50, and 70.

Mainly dupattas, sarees and shirtings are produced by warp knitting. Tricot type shirtings from nylon and polyester are produced by 75 per cent of the units. As recent trends indicate that warp knitted shritings are becoming increasingly popular, there is scope for introducing better techniques of finishing and it may be advisable to set up a special processing house for finishing of warp knitted fabrics.

The survey has revealed that there is acute shortage of trained technicians and there is therefore immediate need for establishing training facilities in warp knitting technology. Scope for rationalization of work load of labourers has also been revealed.

The survey has shown that the industry has tremendous potential for expansion and therfore careful study of requirements of raw material and technical personnel is called for to place the industry on a sound basis.

CMRS Annual Report, 1964-65

The Annual Report of CMRS, Dhanbad for the year 1964-65 has been published. The report (pp. 274) reviews the research activities of the Station under the two main heads, Research Projects and Testing and Analysis Work, which are further divided into various groups such as mine technology, mine safety, mine health and mine engineering. The activities under Research Project groups have been given systematically, giving the title of the projects followed by salient features of the project such as object, importance and utility, instrumentation and equipment used and the results and data obtained. The testing and analysis work has also been reported in detail. The third part of the report deals with technical services of the Station such as assistance to industry and other organisations, information service, publications, foreign exchange saving and others. The appendices given at the end of the report include details regarding staff, budget, memberships on committees, publications, patents, lectures and various other activities.

STAFF NEWS

Appointments

Dr S. Sarkar & Shri P. Srinivasulu, Scientists, SERC, Roorkee (Jan. 1 & Feb. 17, 1966 respectively)

Drs Allauddin Ahmad, R.C. Srimal & P.R. Dua, Scientists, CDRI, Lucknow (March 1, 10 & 16, 1966 respectively)

Sarvashri Arun K. Chatterjee & M.A. Haleem, Scientists, CFTRI, Mysore (March 9 & 10, 1966 respectively)

Shri Ram Singh Tank, Scientist, CSIO, Chandigarh (March 10, 1966).

Transfers

Shri B.C. Raychaudhuri, Scientist, CBRI, Roorkee—CMERI, Durgapur (March 4, 1966).

Shri K.L. Vij, Administrative Officer, CBRI, Roorkee—CSIR Secretariat, New Delhi (March 5, 1966).

Shri Kharati Lal, Administrative Officer, NML, Jamshedpur—CDRI, Lucknow (March 9, 1966).

Shri K.L. Wadhawan took charge as Administrative Officer from Shri K.M. Agarwala, PID, New Delhi (March 23, 1966).

Resignation

Dr K.L. Arora, Scientist, CDRI, Lucknow (April 17, 1966).

Deputation

Shri B.K. Guha, Scientist, NML, Jamshedpur, has been deputed to Canada for six months training in the field of alloy and special steel metallurgy under the Colombo Plan.

ISI Nominations

Dr A.R. Verma, Director, NPL, New Delhi—Chairman, Commercial Weights and Measures Sectional Committee.

Shri G.P. Mathur, Scientist, NML, Jamshedpur—Alternative member, Ores and Raw Materials Sectional Committee.

Research Progress

(*Contd from p. 1 col. 3*)

the mean was not more than 8 per cent.

The following data have been collected on the basis of tests with single storey building models in the tunnel: (1) Variation of the indoor velocity in the case of (i) rooms with cross ventilation, (ii) two adjacent windows, (iii) three windows (two adjacent and the third opposite to the first) with angle of incidence of the outside stream from 0° to 90°; (2) Effect of ceiling height variation on distribution of indoor air velocity in the above cases.

The studies carried out in a factory building model having the ratio of window area to the floor area 1:7.5, 1:15 and 1:30 revealed that the ratio 1:15 provided the most satisfactory result. About 40 per cent of the floor area had the benefit of 25 per cent of the outside wind velocity.

RRL, HYDERABAD

Anticorrosive Paint for Ship Bottoms—A paint composition has been developed for protecting the ship bottoms against the corrosive action of sea water. The paint has been found to successfully withstand stringent raft exposure tests for one year at a naval dockyard. Based almost entirely on indigenous raw materials, the paint employs cashewnut shell liquid, a by-product of the cashew industry, as the principal component. Further work is directed to replace the lead-based pigment which has now an imported metal content, so as to make the paint completely indigenous.

NEW PUBLICATION

Instruments News

The Central Scientific Instruments Organization, Chandigarh has started bringing out a quarterly news-letter *Instruments News* with the object of keeping the industry better informed of the activities of the Organization. The news-letter, as a forum for exchange of views on problems connected with instrumentation both on national and international level, is expected to help instrumentation in India catch up with other countries in quicker time. The first issue of the news-letter was issued in January 1966.

PATENTS

Filed

104196 : *Process for the production of tristearin like materials from castor oil*—G.L. Reddy & J.S. Aggarwal, RRL, Hyderabad.

104208 : *Electronic cyclic timer* Promode Kumar Basu, CMERI, Durgapur.

104388 : *New central nervous system depressants*—A.P. Bhaduri, J.N. Sharma, C.R. Prasad & N.M. Khanna, CDRI, Lucknow.

104522 : *Improvements in or relating to the inhibition of self-corrosion of aluminium as a galvanic anode in alkaline media*—N. Subramanyan & V. Kapali, CECRI, Karaikudi.

104523 : *A process for the production of fluxed ash coke suitable for metallurgical processes*—A. Lahiri, A.K. Moitra & N.G. Banerjee, CFRI, Dhanbad.

104527 : *Remote indicating hydraulic load cell using electrical resistance strain gauges*—R.N. Gupta & B. Singh, CMRS, Dhanbad.

Accepted

91411 : *A thin tube soil sampler*—A.K. Deb & V.S. Aggarwal, CBRI, Roorkee.

93146 : *A yarn tension measuring and recording instrument*—Akshayabat Pande & S.R. Ranganathan, SRIFIR, Delhi.

94769 : *An improved device for the continuous hot-dip coating of metallic strip and wire*—Moti Jivatram Shahani, NML, Jamshedpur.

NOTIFICATION

It is proposed to appoint (i) Director for the Central Design and Engineering Organization (CDEO), New Delhi;

(ii) Director for the Central Indian Medicinal Plants Organization (CIMPO), Lucknow (Scale of pay Rs 1800-100-2000 or Rs. 2000-100-2500 depending upon the qualifications and experience ; and

(iii) Chief Editor for the Publications & Information Directorate, New Delhi (Scale of pay Rs. 1600-100-1900; a higher scale of pay may be considered in the case of an exceptionally qualified person).

The functions of CDEO are broadly :

Economic studies and evaluation of projects developed in the CSIR, design, engineering, erection and commissioning of pilot plants and industrial plants on the basis of know-how developed under the aegis of the CSIR, in collaboration with the Laboratories/Institutes concerned. The Organization acts as project consultants to the National Laboratories/institutes and helps in the design and engineering of products and processes developed by them.

The Director should possess good qualifications in engineering with considerable experience in (a) preparation of feasibility and project reports for industrial projects ; (b) designing and engineering of pilot plants and industrial plants ; and (c) consultancy work for industry.

CIMPO has the following functions among others : (i) evolving and laying down standards for plant drugs ; (ii) development of intensive and large scale cultivation of medicinal and essential oil plants, indigenous as well as exotic under different regional conditions ; (iii) introduction of medicinal and essential oil plants and promotion of large scale commercial cultivation ; (iv) survey of resources of medicinal and essential oil plants in the country.

Apart from guiding and supervising the activities of the Organization, the Director will be called upon to plan and organise activities of farms for large scale commercial cultivation of medicinal and essential oil plants. He may have to organise survey of lands with a view to ascertaining suitability for drug cultivation. Experience in farm planning, farm engineering and agricultural practices related to economic plants will be necessary.

The main duties of the Chief Editor are (a) editing the Journal of Scientific and Industrial Research and the associated scientific journals ; (b) building up the background information for and publication of the 'Wealth of India' series; and (c) publication of monographs, reports and seminars and conferences and other scientific and technical literature.

The Chief Editor will be responsible for the maintenance of a high standard of excellence in the editing and production of the journals and the literature published.

Good basic qualifications in Science will be preferred. In addition, sound knowledge of English and experience in publication, production, documentation and editorial work of high standard and experience in management will be considered essential.

There is no standard form of application for these posts. Persons who wish to be considered are invited to send a statement of their curriculum vitae by name to the Director-General, Scientific & Industrial Research. Those who wish to send nominations for the post may also forward their proposals to the Director-General.

All communications will be treated as Confidential. Statements and proposals should reach the Director-General on or before May 15, 1966 at the office of the Council of Scientific & Industrial Research, Rafi Marg, New Delhi-1.

Printed and published by Shri S.A. Chari, Editor, Publications & Information Directorate (CSIR), Delhi-12, at Asia Press, Delhi-6.

RN 4212/5

CSIR NEWS

VOL. 16 JULY 30, 1966 : SRAVAN 8, 1888 NO. 14

24-8-66.

DIRECTORS' CONFERENCE

The Sixteenth Conference of the Directors of National Laboratories/Institutes of CSIR and Research Associations was held at the National Aeronautical Laboratory, Bangalore during July 4–5, 1966. Dr S. Husain Zaheer, Director-General, Scientific & Industrial Research presided over the Conference which was attended by all heads of national laboratories and cooperative research associations. Shri M.C. Chagla, Union Minister for Education and Vice-President of CSIR, was also present. Important recommendations in regard to national research projects, industrial liaison, research utilization and inter-laboratory collaboration were arrived at the Conference.

National Research Projects. About 140 projects were selected from over 237 national research projects, recommended by the Get-Together of Research and Industry held during last December, and their early implementation was urged. The Conference also appointed a five-member committee for this purpose, consisting of Dr S. Husain Zaheer, DGSIR, Prof. S. R. Mehra, Director, CRRI, New Delhi, Shri M. S. Sundara, Financial Adviser, Shri Baldev Singh, Scientist-in-Charge, Directorate of Research Coordination, Industrial Liaison and Extension and Shri K. G. Krishnamurthy, Secretary.

Industrial Liaison. In order to achieve permanent and continuous liaison with industry at the various levels, the Conference suggested that industry-oriented liaison centres should be established at important centres of industry. Each centre would serve one major industry and would be closely

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NAL, Bangalore — Shri M. C. Chagla addressing the Conference. Also seen are (left to right) Dr Atma Ram, Director, CGCRI, Dr S. Husain Zaheer, Director-General and Shri K. G. Krishnamurthy, Secretary (extreme right)

RESEARCH PROGRESS

CGCRI, CALCUTTA

Catalyzed Crystallization of Glasses. The relation between the complex activation energy term (E) comprising all the activated steps in crystallization, and the exothermic peak temperature (T_m) due to crystallization of glasses during differential thermal analysis (DTA) has been studied. The relation between the activation energy for nucleation and the complex activation energy for crystallization has also been studied.

It has been found that the difference $\triangle T$, in the exothermic peak temperature in DTA of coarse and fine particles of glasses is a quantitative representation of the extent of volume crystallization, when the difference in the free surface energy is kept constant. A decrease in the value of $\triangle T$ indicated a decrease in the activation energy of nucleation and crystal growth.

Based on the $\triangle T$ measurements, the effectiveness and the requisite quantity of Pt, Ag, Si, Fe_2O_3, TiO_2 and SnO_2 for heterogenous nucleation and crystallization of lithium disilicate glasses have been studied. The activation energy for nucleation and crystallization was the lowest with 5×10^{-3} to 15×10^{-3} mole Ag per 100 g. of the lithium disilicate glass.

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BRIEFS

Meetings

The half-yearly meetings of Physical Research Committee, and Chemical Research Committee of CSIR will be held at the CSIR Secretariat, Rafi Marg, New Delhi, on August 18, 1966 at 3.00 p.m., and August 23, 1966 at 10.30 a.m. respectively.

Conference

The South India Textile Research Association is organizing its Eighth Conference on Human Relations in Industry at Coimbatore during August 19–20, 1966. The objects of the Conference are: (i) to strengthen the existing awareness among all those connected with industry of the importance of human relations; (ii) to encourage interest in the study of particular problems of human relations from the point of view of management, labour and the community; and (iii) to suggest lines of action for the promotion of better human relations in industry.

The Conference will be inaugurated by Shri S. Nijalingappa, Chief Minister of Mysore. There will be three sessions in addition to the inaugural session. The subjects to be covered include: From family to professional management; Consultant and client relations; and Industry and Society.

Specialists from various organizations like the National Productivity Council, Institute of Management, Textile Association, Trade Unions, Foreign Consulates, Research and Educational Institutions, are taking part in the Conference.

CMERI Reports

The research results of the Central Mechanical Engineering Research Institute, Durgapur, are being published in the form of Reports. The reports are issued under three different series, viz. A, B and M, covering applied research, basic research and review articles respectively.

In the series A and B, the first reports pertain to Electric cradle dynamometer, and Influence of temperature-dependent fluid properties on heat transfer in co-axial tube heat exchanger, respectively. The first five reports in the M series are entitled: Indigenous design—A case study of cable making machinery; Air cycle refrigeration at present and in future; Surface roughness measurement; Scientific research for the development of indigenous know-how; and Prospects for ultrasonic testing of welds in India, respectively.

The Institute proposes to publish about 15 such reports per year. The publications are free of cost and copies can be had from the Institute.

Protection Against Earthquake Damage

India is one of the several countries that suffer from earthquakes. Till today, there is no method of predicting or preventing this fury of nature resulting in heavy loss of life and property. A 10-page brochure entitled 'Protection Against Earthquake Damage', which includes a brief description about how the earthquakes occur and what could be done to minimize the damage from them, has been brought out. Written in a popular manner, the brochure (Authors: Jaikrishna and Brijesh Chandra) also carries some recommendations for building houses less vulnerable to such shocks. Copies are available at the Publications and Information Directorate, Hillside Road, New Delhi-12.

RRL Jorhat Annual Report 1964–65

The first Annual report of the Regional Research Laboratory, Jorhat, for the year 1964–65 has been published. The Report (pp. 57) includes the work of the laboratory under the project/division/section heads: Paper, Cellulose and Hardboard; Coal and Petroleum; Cement; Chemical and Design Engineering; Earthquake Engineering; General Engineering; Medicinal and Economic Plants; Physics and Electronics; Biochemistry; Analytical Chemistry; and Library and Information. Information on other items, such as seminars and conferences, deputations and lectures is also included. The appendices include information on research papers, organization of the laboratory, colloquia, etc.

CBRI, Roorkee

A two-week advanced course in Building Physics was conducted at the Institute to equip the architects and engineers with the advanced knowledge of acoustics, heat transfer, illumination, ventilation and climatology, which is gaining importance in modern architecture and building design. The course started on June 27, 1966, included lectures, discussions, demonstrations, practicals and visits to the works of other organizations. Twenty engineers and architects from CPWD, State PWD, Defence Organizations, universities, and public sector projects attended the course.

NAL, Bangalore

The Aligarh Muslim University has recognized the Laboratory for post-graduate research work for Ph.D. degree.

The University of Calcutta has recognized the Laboratory for research work leading to the award of post-graduate degree.

Visitors

MR C. G. TUCKER, FAO expert on freeze drying—CFTRI, Mysore (June 17–23,1966).

SHRI S. A. MEHDI, Deputy Minister for Mines and Metals—CFRI, Jealgora (June 18, 1966). He expressed high appreciation of the work of the Institute.

A team of teachers of various technical colleges of India including two from USA, MR C. E. TAYLOR of the University of Illinois and MR W. F. RILEY of IIT Research Institute, Chicago—CMRS, Dhanbad (June 22, 1966).

MR H. FISCHER, Head of the Trade Representation of German Democratic Republic in India (June 6, 1966), PROF. R. G. HANNES, University of Wach, USA (June 30 to July 1, 1966), PROF. W.M. HAAS, Michigan Technological University, USA (June 30, 1966) & PROF. JOSEPH SCHWAIGHOFER, University of Toronto, Canada (June 30, 1966)—CBRI, Roorkee.

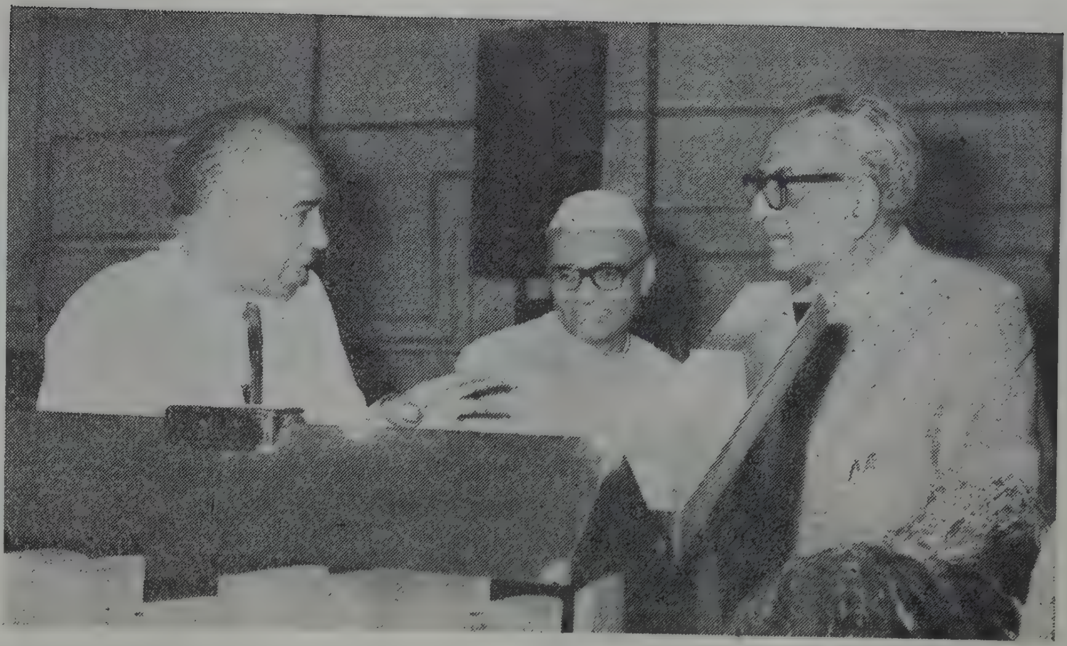
DR R. V. ALLENSTEIN, Washington University, USA, MR TOM STRICKLER, Department of Physics, Berea College, Kentucky, USA & DR B. M. ANAND, Department of Physics, Panjab University (July 2, 1966), MR L. R. DAVIS, California, USA & MR H. C. PREUL, University of Cincinnati, Ohio, USA (July 4, 1966), DR J. ZUCKERMAN, Unesco (July 15, 1966)—CSIO, Chandigarh.

Shri Chagla Visits CGCRI

Shri M. C. Chagla, Minister of Education and Vice-President, CSIR, visited the Central Glass & Ceramic Research Institute, Calcutta, on July 11, 1966 and addressed the staff of the Institute.

Shri Chagla expressed his happiness on meeting the scientists of the Institute and referred in eulogistic terms to the Institute as unique in that it had produced optical glass using indigenous technology through collaboration of Indian scientists. He then expatiated on the desirable qualities of the scientist, namely, sense of dedication, sense of team work and sense of self-reliance.

The Vice-President then expressed his great appreciation of the leadership of Dr Atma Ram in training the young scientists of the Institute and announced the appointment of Dr Atma Ram as Director-General to lead the scientists in all CSIR laboratories.



CGCRI, Calcutta — Shri M.C. Chagla examining a piece of optical glass developed at the Institute. Also seen in the picture is Dr Atma Ram, Director (middle)

CMRS, Dhanbad

The Central Mining Research Station, Dhanbad, participated in the 'Bihar Through Plans' exhibition held at Patna during May 14 to July 12, 1966, to apprise the public of the important research activities of the Station which is assisting in the development of the mining industry in Bihar and the country as a whole.

Some of the important activities of the Station like the study of roof support and roof movements in mines, testing of electrical equipment for flameproofness and intrinsic safety, sand stowing in coal mines, testing of wire ropes for the industry using 500-ton horizontal tensile testing machine, were explained to the visitors through photographs and charts.

A large number of engineers, industrialists, professors of various institutes and elite of Patna City visited the CMRS stall.

STAFF NEWS

Appointments

Dr M. C. Badrinarayana (May 16, 1966), Sarvashri Syed Younus Ahmed (June 7, 1966), Madhava Krishnaiah (June 24, 1966), M. V. Sharangapani (June 30, 1966) & Dr V. S. Nair (July 11, 1966), Scientists, and Dr T. N. R. Verma (June 22, 1966), Pool Officer, CFTRI, Mysore.

Shri S. J. Sant Ram, Administrative Officer, VITM, Bangalore (June 22, 1966).

Dr G. S. Bajwa, Scientist, CSIO, Chandigarh (July 8, 1966).

Dr R. Ramaiah & Shri K. S. Rangarajan, Scientists, PID, New Delhi (July 25, 1966).

Resignations

Shri S. Suryanarayana Sastry, Scientist, NAL, Bangalore (May 15, 1966).

Shri A. K. Agarwala, Scientist, RRL, Jorhat (June 8, 1966).

Transfers

Shri A. Gonsalves, Section Officer, NAL, Bangalore—MSTM, Bombay (June 23, 1966).

Shri K. M. Cherian, Section Officer, VITM, Bangalore—NAL, Bangalore (June 23, 1966).

Deputations

Dr N. K. Panikkar, Director & Dr S. Z. Qasim, Scientist, NIO, New Delhi, attended the 2nd International Oceanographic Congress held at Moscow during June 1–10, 1966. Dr Panikkar presented a paper on 'Fisheries of the Indian Ocean' and also presided over a session on 'Indian Ocean and Antarctic'. On his way back, he attended a meeting of the Intergovernmental Oceanographic Commission working group on 'Mutual Assistance in Oceanography' at Paris.

Shri A. D. Deshpande, NCL, Poona, proceeded to France on June 9, 1966 for one year training in 'Fluidization and its application to chemical engineering operations and processes' under Indo-French Co-operation Agreement.

Dr K. S. Chari, Scientist-in-Charge, CDEO, New Delhi, had been on deputation to UK during June 13–July 2, 1966, under Scientific Exchange Programme between CSIR and British Council. During his stay in UK he attended the International Chemical & Petroleum Engineering Exhibition at Olympia and European Federation of Chemical Engineering. Besides, he visited many private concerns.

Dr Sukh Dev, Scientist, NCL, Poona, participated in the International Symposium on 'Natural Products' held at Stockholm, Sweden during June 20–July 2, 1966. He presented a paper on 'Kolavenol and Kolavelool, two diterpenoids with rearranged skeleton' and also presided over one of the sessions.

Sarvashri A. Krishnan & K. S. Hebbar, Scientists, NAL, Bangalore, were deputed for advanced studies and research (16 months) in West Germany under the German Academic Exchange Service w.e.f. June 26, 1966.

Dr G. P. Sastry, Scientist, RRL, Jorhat, proceeded to Federal Republic of Germany on June 27, 1966 under German Academic Exchange Service Scholarship.

Nominations

Dr B. R. Nijhawan, Director, NML, Jamshedpur—Honorary Membership of Sociate Francaise de Metallurgie, Paris.

Shri M. M. Suri, Director, CMERI, Durgapur—Member Committee to go into the question of setting up a research-cum-training centre on rice, Ministry of Food and Agriculture, New Delhi.

Dr S. Mukerjee, Scientist-in-Charge, IIEM, Calcutta—Member Cholera Expert Group of the Indian Council of Medical Research for a period of 3 years w.e.f. April 1, 1966.

Processes for Commercial Exploitation

Processes Released

(i) A new soil sampler, CBRI, Roorkee—MST Engineers, Roorkee (exclusive).

(ii) Water and weatherproof resin composition based on CNSL, CBRI, Roorkee—Bonita India Limited, New Delhi (exclusive).

(iii) Hot dip aluminizing of ferrous materials, NML, Jamshedpur—The Shanker Industries, Calcutta (Non-exclusive).

New Processes

(i) Preparation of benzidine by electrolytic method—CECRI, Karaikudi.

(ii) Benzyl alcohol (free from chlorine) from benzoic acid —CECRI, Karaikudi.

(iii) Oxidation of toluene to benzaldehyde—CECRI, Karaikudi.

(iv) Servo-operated pen recorder —CEERI, Pilani.

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RESEARCH PROGRESS

The results obtained by DTA method agree with those obtained by the △T method. The method of measuring the heat of crystallization of glasses from the area under exothermic peak in DTA by using a material of known heat of transformation for internal calibration was not as suitable as the △T method.

CEERI, PILANI

Jigs for Semiconductor Devices. A number of jigs have been designed and developed for reliable fabrication and testing of semiconductor devices.

In mesa diodes, the height of the mesa determines its series resistance. A jig which measures the thickness of a semiconductor slice to one micron has been developed for controlling the mesa height.

The junction area in solid state junction devices determines their capacitance and current carrying capacity. In order to control the junction capacitance variation within ± 0.5 pF, it is necessary to control the junction area within $\pm 10^{-6}$ sq. cm. A printing device which can print wax dots as small as 50 μ diameter with the above tolerance has been designed and fabricated.

Making contacts of small area within the prescribed close tolerance, specially in microwave solid state devices, is a difficult problem. A jig has been developed by which it is possible to make reproducible contacts of required precision by applying a fixed amount of mechanical pressure on the semiconductor slice.

For testing diodes and transistors, a two-point probe unit has been designed and fabricated. Each point probe unit has three motions and can thus reach any desired point on the slice. For testing transistors, the collector contact is made to the platform on which the silicon slice rests, and the emitter and base contacts are made by the two probe points.

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linked with laboratories that deal with that industry.

The Conference recommended strengthening of the existing research advisory committees in the various laboratories to enable the technologists in industry to have greater participation in the selection and planning of research projects. The laboratories serving specific industries have been asked to establish regional centres in areas of concentration of those industries for consultation and developmental work.

The Conference urged that every laboratory should establish a Division for operational studies to educate industry in the use of scientific methods in testing, evaluation and control; to ensure that optimum use of equipment and manpower was achieved; to maximize productivity as well as quality of the products by improving existing processes; and to communicate the results of research obtained and help in their implementation.

Research Utilization. For facilitating research utilization, development of the closest possible contact with industry in the public and private sector and the Directorate-General of Technical Development was suggested. Participation in advisory panels of laboratories, industrial visits by CSIR scientists and individual and institutional consultancy were the methods suggested for this purpose. Desirability of collection of techno-economic data as regards applied projects in progress and those to be newly-undertaken was also emphasized.

The Conference recommended that only well tried out know-how based on pilot plant or a prototype unit should be released to industry for commercial exploitation. The know-how must further ensure economic returns. The Conference also suggested certain guide lines for assessing the know-how prior to release to industry.

Inter-laboratory Collaboration. It was suggested that every laboratory should circulate its project proposals to other laboratories at the formative stage, and seek comments regarding desirable collaboration so that the identification of various subjects in which different laboratories had common interest, could be brought about automatically. The modus operandi suggested was to form common expert groups of each subject consisting of an expert from each concerned laboratory as well as an expert or two specialized in that field from outside CSIR by common consent. These expert groups would then advise on a continuing basis various laboratories concerned as to the manner in which laboratory inter-action would best take place.

Shri M. C. Chagla, while addressing the concluding session, asked the Directors to relieve themselves of administrative work to the extent possible and share responsibility with their officers. He suggested that a special orientation course should be organized for Administrative Officers working in the national laboratories.

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RN 4212/5

CSIR NEWS

VOL. 16 SEPTEMBER 30, 1966 : ASVINA 8, 1888 NO. 18

Seminar on Electrochemistry

The Central Electrochemical Research Institute, Karaikudi, is organizing the Seventh Seminar on Electrochemistry during December 27–30, 1966. The following technical sessions are scheduled to be held: (i) Electrode kinetics, electrochemical equilibria and electroanalysis; (ii) Electrodeposition and metal finishing; (iii) Batteries; (iv) Corrosion; (v) Electro-organic and electro-inorganic products; (vi) Electrothermics and electrometallurgy; and (vii) Solid state electrochemistry.

Abstracts (about 200 words) in triplicate of papers may be sent to Dr C. V. Suryanarayana, Convener of the Seminar, Central Electrochemical Research Institute, Karaikudi before October 1, 1966 and the full paper (about 600 words) in duplicate by November 1, 1966.

Dr Atma Ram & Prof. Seshadri Return from UK

Dr Atma Ram, Director-General, Scientific & Industrial Research and Prof. T. R. Seshadri, Emeritus Professor of Chemistry, University of Delhi, returned to New Delhi on September 16, 1966, after attending the 120th Annual Meeting of the British Association for the Advancement of Science (BAAS) at Nottingham as representatives of Indian Science Congress Association. During their stay in UK, they discussed problems relating to the organization and utilization of research and the much required support to research with eminent British scientists, viz. Prof. P. M. S. Blackett, Sir Robert Robinson, Sir John Cockcroft, Sir Willis Jackson, Sir Joseph Burtt Hutchinson, and Sir Evart Ray Herbert Jones. Problems connected with the new trends in scientific research in universities, laboratories run by Government and those attached to industries, and functioning of the National Research

Contd on p. 3, *col.* 3

RESEARCH PROGRESS

CECRI, KARAIKUDI

Production of Electrolytic Magnesium—The 12 kg. per day pilot plant for the production of electrolytic magnesium from Salem magnesite or bitterns, sponsored by the Madras Government has been functioning successfully at the Institute. Completely designed and fabricated at the Institute, the plant consists of the following units: (i) unit for dissolution of magnesite in hydrochloric acid to prepare pure magnesium chloride solution; (ii) a spray drier specially designed to dehydrate the magnesium chloride solution in one step, at an operating temperature of 550°–600°C. and with a cell feed capacity of 6 kg./hr; (iii) an electrolytic cell of 2000–2500 amperes capacity to electrolyse fused mixture of salts containing magnesium and other chlorides to get magnesium metal. In a recent continuous run, lasting for 3 weeks, more than 250 kg. of metal was produced and valuable data for scaling up for a large semi-commercial plant have been collected.

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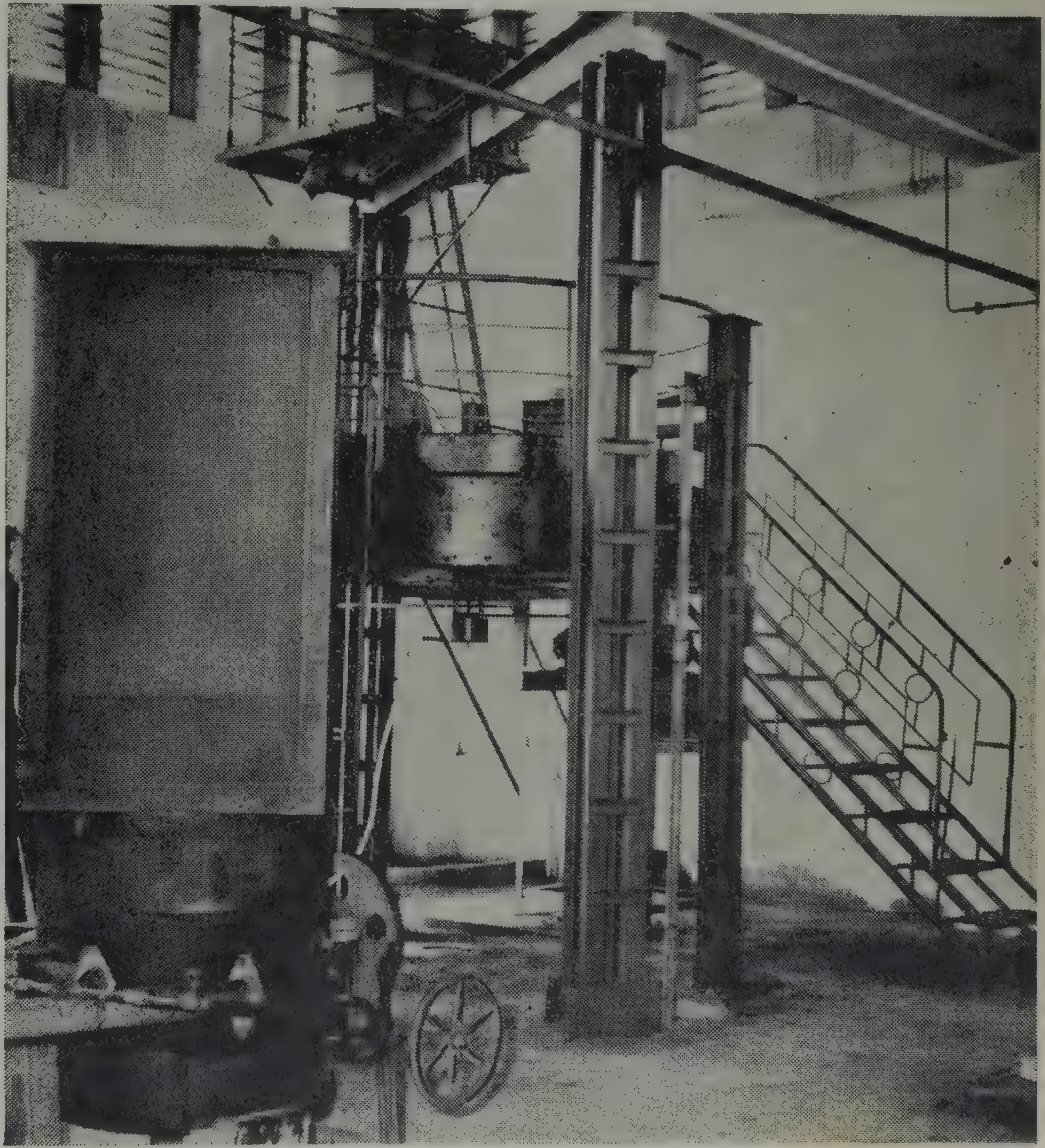

CECRI, Karaikudi—Electrolytic magnesium pilot plant

BRIEFS

Collaboration with Educational Institutions

Visvesvaraya Regional College of Engineering, Nagpur, has started this year an Industrially-Oriented M. Tech. Course with specialization in Public Health Engineering with UN Special Fund Assistance and active collaboration of the Central Public Health Engineering Research Institute. The aim of the course is to train teachers in modern and specialized field of design and technology for regional and other engineering colleges, and design engineers for public health engineering projects. The duration of the course is of two years including two field training programmes on projects or research problems.

Training Courses at CECRI

The five-week course on 'Corrosion and its Prevention' concluded at CECRI, Karaikudi on September 3, 1966. Prof. W.P. Vijayaraghavan, Principal, Alagappa Chettiar College of Engineering and Technology, Karaikudi, distributed certificates to the participants.

The ninth course on 'Electroplating' was started at the Institute on September 6, 1966. Thirteen candidates including eight from Defence organizations and others representing industrial establishments joined the course.

CSIO, Chandigarh

M/s Laboratory Equipment Traders, Ambala Cantt, have established a sponsored pilot plant at the Organization, under an agreement executed with the CSIR for the production of the following optical components: (i) Episcope objectives, 500 mm. focal length; (ii) Diascope objectives, 200 mm. focal length; (iii) Slide projector objectives, 100 mm. focal length; (iv) Epidiascope mirrors, size—178 mm. × 127 mm.; (v) Huygenian eyepieces, 5, 10 and 15X; and (vi) Wide-field eyepieces 5, and 10X.

Coal for Steel Making

A meeting of the Coal Blending & Coking Research Sub-committee (CBCR) was held at the CFRI, Jealgora, on August 17, 1966. Shri S. Chander, Joint General Manager, TISCO, presided

A cooperative research programme on various alternative methods of blending of coal in practice, to be undertaken simultaneously at CFRI and CBCR, Jamshedpur, was drawn up. The Committee stressed the need of wider adoption of selective preparation of coal in coke plants, a method advocated by the CFRI for the conservation of coking coal and for production of coke of superior quality. It was observed that superior coke quality also leads to lower coke rate in blast furnace.

It was agreed to device new test procedure for coke which would simulate actual conditions obtained in plants and standardize the procedure for general adoption in the country. Amongst other things discussed were divergent methods of calculating and reporting coke yields (as revealed in the Mahatab Committee's Report) and the need for adoption of a standard and uniform procedure so that data reported by different steel plants were comparable.

The members visited the various pilot plants at the Institute. They were particularly impressed by the technique of 'Fluxed-Ash Coke' developed at the Institute from entirely non-coking coals.

CLRI, Madras

The new building housing the pilot plants of the Institute was declared open on the August 24, 1966 by Dr A. Lakshmanaswamy Mudaliar, Vice-Chancellor, University of Madras. The function was largely attended by local tanners, industrialists and elite of the city. Dr Y. Nayudamma, Director, CLRI and Shri N. Mahalingam, MLA, Chairman of M/s Coromandel Chemicals Ltd, Madras, welcomed the gathering. Shri A. Nagappa Chettiar, Managing Director, India Leather Corporation and allied concerns, and Chairman, Southern India Chamber of Commerce, on behalf of M/s Coromandel Chemicals Ltd, presented a cheque for payment of royalty to CLRI.

CFTRI, Mysore

A cheque for Rs 12·7 lakhs was presented to the Institute by Mr Robert W. Caldwell, the US Consul in Madras on September 13, 1966.

This amount is the first instalment of the financial support from the National Institute of Health (NIH) of the US Government to CFTRI for research and development of protein food supplements under an agreement entered into in March this year. The Institute will receive in all about Rs 46 lakhs from NIH for this project in a period of four years. About Rs 37 lakhs were received by the Institute from NIH for this scheme under the previous agreement, also effective for four years, which was entered into in January 1962.

While presenting the cheque, Mr Caldwell said that the US assistance to CFTRI was in public recognition of the valuable contribution made by the scientists of the Institute in the field of protein foods.

Dr H. A. B. Parpia, Director, said that the contribution received from NIH was very valuable in strengthening the research projects on the development of high-protein foods.

CDRI Annual Report, 1964–65

The Annual Report of CDRI, Lucknow, for the year 1964–65 has been published. The report (Pp. iv+86) summarizes the progress of research work carried out in various fields, viz. Chemotherapy of filariasis and other helminthic infections, search for antifertility agents, chemotherapy of amoebiasis and viral infections, drugs acting on the nervous system, cardiovascular drugs, coronary heart diseases, chemotherapy of peptic ulcer, antibiotics, chemical pharmacological and pharmacognostic investigations of indigenous medicinal plants, screening of new compounds, chemotherapy of tuberculosis and process development of drugs and pharmaceuticals. Besides, activities, such as technical information, technical aid, collaboration with universities and other scientific institutions, training, seminars, have been included under the head—Other Activites. The appendices include information concerning publications, patents, library, budget, membership of Executive Council and staff.

Oxidation Ponds

In developing communities, particularly where sunshine is ample, oxidation ponds are gaining more importance than the other conventional means of sewage treatment, simply because they offer effective treatment at a reasonable cost. A brochure on the above subject has [illegible]en recently brought out by the Central Public Health Engineering Research Institute, Nagpur. The brochure (Pp. ii+20) deals in a popular manner, with the various aspects of oxidation ponds such as fundamental principles, design features, cost, construction, land requirements, performance, operation, maintenance. Stress is given to aerobic and facultative oxidation ponds. The information is duly supplemented with illustrations. Copies of the brochure can be had free of cost from the Director, CPHERI, Nagpur.

Dr T. Banerjee

Dr T. Banerjee, Deputy Director, National Metallurgical Laboratory (NML), Jamshedpur, took over as Scientist-in-Charge of the Laboratory with effect from August 23, 1966. Dr T. Banerjee (*b.* August 9, 1907) is a D.Sc. in Physical Chemistry from Dacca University and Ph.D. in Electrometallurgy from King's College, London. He joined NML as Assistant Director in 1948 and was promoted as Deputy Director in 1957. At NML, he is the group leader of several projects such as electrolytic production of manganese metal and battery active manganese dioxide, cryolite, development of coinage alloys and substitution of scarce strategic metals. His work relating to the 'Existence of metastable phases in electrolytic alloys' has received international recognition and has been corroborated by Prof. O'Neill of Swansea University of UK and Prof. Polukarov of the USSR Academy of Sciences, Moscow. He has made significant contribution in the field of non-ferrous metallurgy and corrosion.

Dr Banerjee is the author of 140 research papers and 18 patents and has been the recipient of the Cooper Memorial Gold Medal in 1954 and K.G. Naik Gold Medal in 1957.

Dr Banerjee is fellow of the Royal Institute of Chemistry, London, the Institute of Metallurgists, London, and the National Institute of Sciences of India.

RESEARCH PROGRESS

Contd from p. 1, *col.* 3

CGCRI, CALCUTTA

Mullite Refractories from Clay-Bauxite or Quartz-Bauxite Mixes—Refractories containing 80–90 per cent mullite and having low thermal expansion and reheat change have been prepared from Katni and Shevroy bauxites mixed with Jabalpur fire-clay or quartz after firing at a temperature of 1500°–1600°C. High proportion of mullite in refractories is found to improve properties like fusion point, refractoriness under load, thermal shock-resistance and expansion characteristics to a considerable extent. But the porosity of these refractories is very high (35–48 per cent) and the refractoriness under load or initial softening point is low (1400°–1600°).

NML, JAMSHEDPUR

Injection of Naphtha for Iron Smelting in Low-shaft Furnace Pilot Plant—The laboratory conducted investigation on the direct injection of naphtha in the low-shaft furnace pilot plant for the partial substitution of coke for the iron smelting purposes at the instance of the Ministry of Iron and Steel and the Hindustan Steel Ltd. It developed, designed and fabricated indigenously the naphtha injection system without involving any foreign exchange. The injection of fuel oil was compared with that of naphtha for iron ore smelting. Initial trials with fuel oil injection and final trials with the naphtha injection with simultaneous enrichment of the air blast with oxygen showed that naphtha can be successfully injected for iron smelting. As compared with furnace oil and coke, the use of naphtha has been found much more economical.

RRL, HYDERABAD

Recovery of Potash from Mica Wastes—A simple process has been developed for the recovery of about 90 per cent potash as soluble potassium salt using mica waste from Andhra Pradesh containing about 11 per cent potash. In the process, mica waste is heated at an elevated temperature with alkali, and alkaline earth salts and the mass is leached with water and filtered. Potassium from the mass goes into solution with water as potassium sulphate and is recovered by concentrating the aqueous solution. Similar work on felspar is in progress.

NAL, BANGALORE

Synchronous Equatorial Earth Satellites—A research team of the Applied Mathematics Division of the Laboratory has analysed the available data from the various satellite observations pertaining to the shape of the Earth, by means of Digital Computer. From the analysis it was shown that (i) the longitudinal difference of 90° among consecutive geostationary locations (2 stable and the other two unstable) of a synchronous equatorial satellite (SES) is a consequence of the near-ellipticity of the equatorial section of the geoid at the synchronous height and not that of the Earth's geoid, as has been supposed so far; and (ii) the SES above the Indian Ocean, lying quite possibly between 70° to 80°E can be determined more quickly, allowing a wider scope for uncertainty effects, than the corresponding one in the West. The team examined the accuracy and adequacy of the currently available (satellite) data and in greater detail, the effect of the consequent orbital injection error, arising from the uncertainty in the exact location of the geostationary positions on the satellite's motion. Since the stable geostationary locations differ very nearly by 180°, the determination of the eastern position thus vastly improves the chances of determining its counterpart in the west. The satellite tends to oscillate relatively like a pendulum with a period of approximately 2 to 3 years. This study will have an important bearing on work connected with the ground satellite tracking communication station at Ahmedabad which is expected to be ready by 1968.

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Development Corporation, Ministry of Technology and the Scientific Research Council were also the subject of discussion.

They also visited a number of research laboratories, institutes and organizations in UK, including the Warren Spring Laboratory, Road Research Laboratory, Tropical Products Institute, British Non-ferrous Metals Research Association, National Physical Laboratory and Clarendon Laboratory.

STAFF NEWS

Deputations

Dr H.S.R. Desikachar, Scientist, CFTRI, Mysore, proceeded to Japan on August 18, 1966, for participating in the symposium on 'Problems in Development and Ripening of Rice Grain'.

Dr K. Bhaskaran, Scientist, CDRI, Lucknow, resumed duty on August 20, 1966 after the completion of his assignment as medical consultant under WHO.

Shri V. G. Upadhaya, Scientist, CGCRI, Calcutta, resumed duty on August 28, 1966 after the completion of advanced studies in 'Enamelling Technology' in West Germany.

Shri M. Sundaram, CECRI, Karaikudi, has been deputed to France for training in the field of Protection Against Corrosion under the Indo-French Technical Cooperation Agreement for a period of seven months from September 1, 1966.

Dr M. Narayana Rao, Scientist, CFTRI, Mysore, returned on July 26, 1966 from Canada after two years stay as a fellow of the National Research Council at Nutrition Division of the Food and Drug Directorate, Department of National Health and Welfare, Ottawa.

Dr H. A. B. Parpia, Director, CFTRI, Mysore, participated in the Seventh International Congress of Nutrition held at Hamburg during August 3–10, 1966; meetings of the Protein Advisory Group, a joint organization of FAO, WHO and UNICEF, at Geneva during August 17–19, 1966; Second International Congress of Food Science and Technology, at Warsaw during August 22–27, 1966; and meeting of the Advisory Committee of the International Food Technology Training Centre at Rome during August 30–31, 1966. At the International Congress of Food Science and Technology Dr Parpia was the Chairman of the session on the Economic, Sociological, and Nutritional Aspects of Food Production.

Honours & Awards

Shri A. H. Kapadi, NCL, Poona—Ph.D. (Poona University); thesis: *Studies in diterpenoids* (Guide: Dr A. Goswami).

Shri S. S. Kohli, NCL, Poona—Ph.D. (Poona University); thesis: *Some investigations on electrical and other properties of thin films* (Guide: Dr A. Goswami).

Shri B. S. Krishnamurthy, NCL, Poona—Ph. D. (Poona University); thesis: *Theory of carrier mobility in polar semiconductors* (Guide: Dr K. P. Sinha).

PATENTS

Filed

106114: *Improvements in or relating to rust and scale removing jelly*—K. S. Rajagopalan & C. Rajagopal, CECRI, Karaikudi.

106172: *A process for the disproportionation of alkyl benzenes*—G. S. Bhargava, P. Duhaut, G. Follain, Mohan Lal & Nirmalya Ray, IIP, Dehra Dun.

106205: *Electronic (solid-state) load controller*—Pankaj Ranjan Basu, CMERI, Durgapur.

106219: *Reclamation of old newspapers by de-inking for the production of newsprint*—B. P. Chaliha, S. B. Lodh & M. S. Iyengar, RRL, Jorhat.

106323: *Clamp type friction prop with two hinges*—Bhagwant Singh & N. C. Saxena, CMRS, Dhanbad.

106324: *Improvements in or relating to primary wet cells*—P. L. Joseph, V. B. G. Jothinathan, B. A. Shenoi & M. A. V. Devanathan, CECRI, Karaikudi.

106325: *Improvements in or relating to the fabrication of silver chloride activated batteries*—P. B. Mathur & R. Balasubramanian, CECRI, Karaikudi.

106419: *A process for the production of hydrous or anhydrous lanolin (Superfine grade or better) from wool crease*—S. K. Ghosh & B. S. Rawat, IIP, Dehra Dun.

Accepted

94768: *An improved device for the isolation of dross in molten metallic baths during continuous hot dip processing strip or wire*—Moti Jivatram Shahani, NML, Jamshedpur.

96417: *Improvements in or relating to an anode material for use in primary cells*—M. A. V. Devanathan, N. Ramaswamy & S. Venkatesan, CECRI, Karaikudi.

95419: *Improvements in or relating to the sharpening of razor blades*—M. A. V. Devanathan, V. K. Venkatesan & S. Sarangapani, CECRI, Karaikudi.

95421: *Improvements in or relating to bright nickel plating*—R. Subramanian & B. A. Shenoi, CECRI, Karaikudi.

Sealed

90957: *Preparation of porous carbon electrode using vegetable carbons for use in air depolarized cells*—A. K. Abdul Waheed, K. V. N. Rao & K. S. G. Doss, CECRI, Karaikudi.

NEW PUBLICATIONS

First Get-Together of Research and Industry

Addresses and Key Papers—Gists of speeches delivered by Ministers, Industrialists and Scientists, Key Papers of 15 working groups, and a list of papers presented. Pp. iv+273 (24×16 cm.); Price Rs 15 ($ 5 or 30 s.)

Working Group 1—Papers on electronics, instruments, radio, television; Public Address Systems, Standards, Physics based industries. Pp. 65 (24×16 cm.); Price Rs 4.50 ($ 1.50 or 9 s.)

Working Group 2—Papers on Industrial Organic Chemicals, Biochemical Dyes and Intermediates, Rubber, Resins, Adhesives, Plastics, Paints, Varnishes, Surface Coatings. Pp. 13 (24×16 cm.); Price Rs 1.50 ($ 0.50 or 3 s.)

Working Group 3—Papers on Inorganic and Heavy Chemicals, Fertilizers, Cements, Marine Chemicals. Pp. 62 (24×16 cm.); Price Rs 4.00 ($ 1.30 or 8 s.)

Working Group 4—Papers on Drugs & Pharmaceuticals, Medicinal & Aromatic Plants, Public Health Engineering. Pp. 36 (24×16 cm.); Price Rs 2.50 ($ 0.75 or 5 s.)

Working Group 5—Papers on Chemical Plant & Equipment, Electrical & Mechanical Engineering, Agricultural, Textile and Mining Machinery, Automobiles. Pp. 115 (24×16 cm.); Price Rs 7.00 ($ 2.00 or 14 s.)

Working Group 10—Papers on Petroleum Refining, Petrochemicals, Petroleum Technology and Oil & Gas Exploration. Pp. 21 (24×16 cm.); Price Rs 2.00 ($ 0.60 or 4 s.)

Working Group 11—Papers on Energy, Coal. Pp. 7 (24×16 cm.); Price Re 1.00 ($ 0.30 or 2 s.)

Working Group 12—Papers on Glass, Ceramics, Enamels, Clays & Refractories, Mica. Pp. 15 (24×16 cm.); Price Rs 1.50 ($ 0.50 or 3 s.)

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CSIR NEWS

VOL. 16 OCTOBER 15, 1966 : ASVINA 23, 1888 NO. 19

INTERNATIONAL FOUNDRY CONGRESS

The 33rd International Foundry Congress is being organized at Vigyan Bhavan, New Delhi. The Congress, first of its kind to be held in any part of the world east of Suez, will be inaugurated by the President of India on December 5, 1966. The National Metallurgical Laboratory, Jamshedpur, is playing a prominent role in arranging the Congress.

The Secretariat of the Congress was declared open at Vigyan Bhavan on October 5, 1966 by Dr Atma Ram, Director-General, Scientific & Industrial Research. Several top ranking scientists and Presidents of the Foundry Associations of the World and also delegates from over 24 countries and observers sponsored by United Nations from severla developing countries will be attending the Congress.

The main theme of the Congress is 'Technological Developments as Means to Increase Productivity in Foundry Industry'. As many as 34 official exchange papers and technical communications from countries like Belgium, Bulgaria, Czechoslovakia, Finland, France, Germany, Great Britain, Italy, India, Japan, Netherlands, Poland, Sweden, Switzerland, USA, USSR, Yugoslovia, will be presented and discussed in five technical sessions to be conducted simultaneously. The papers received cover all aspects of foundry technology including the latest investigations.

Following is the message to the Congress from the Prime Minister and President, CSIR, Smt. Indira Gandhi.

> "India's Plans of expanding and diversifying industrial production depend a great deal on the art and science of foundrymen. With the steady advance of Indian technology, foundry skills are also developing rapidly and the stage of self-reliance is fast approaching. Self-reliance, however, does not mean less give-and-take, but more.
>
> "This International Foundry Congress should, therefore, prove very valuable to the foundrymen in India by providing an opportunity for exchange of information on problems of mutual interest and also for establishing closer contacts with each other as nowhere is the interdependence of the world more evident than in science".

Tanners' Get-Together

The next Get-Together of Tanners will be held at the Central Leather Research Institute, Madras, synchronizing with the International Leather Fair. The Get-Together sponsored jointly by CLRI and the Central Small Industries Organization will commence from January 31, 1967.

There will be four technical sessions. The subjects for the technical sessions with the detailed scope for discussion are:

(i) *Import and Export Problems in Leather Industry*—Fourth Plan target, ways and means of achieving the target, Impact of devaluation with reference to export and internal consumption, Technical know-how for the production of finished leathers that have export potentiality, Import substitution, Tanning extracts; Dyestuffs, Finishing and other auxiliaries, and Machinery.

(ii) *Development of Footwear, Leather Goods and Sports Goods Industries*—Urgent need for developing these industries, Role of Government in promotion of these industries, Manufacturers' problems and their solutions, Market intelligence, Designing, Lasts, fittings and other accessories, Skilled labour, Machinery, and Proper coordination between tanners and manufacturers.

(iii) *Management Development in Leather Industry*—Need for introducing management practices in leather and allied industries, Proper utilization of materials and waste reduction, Plant layout, Newer and improved tools and techniques to increase productivity, Development of appropriate technology, Inspection and quality control, Incentive and wage payment, Job evaluation, Cost reduction, Need for extension work and role of extension staff, Communication, and Marketing.

(iv) *Central Leather Research Institute Research Programmes for* 1967–68—Problems to be taken up for investigation.

Persons desirous of contributing papers/notes for discussion should contact Shri T.S. Krishnan, Chairman, Tanners' Get-Together Committee, Central Leather Research Institute, Adyar, Madras-20.

Symposium

An All-India symposium on 'Ultimate Load Method of Design of Structures' will be held in the P.S.G. College of Technology, Coimbatore, during the 3rd week of November 1966. Prof. G.S. Ramaswamy, Director, Structural Engineering Research Centre, Roorkee, will inaugurate the symposium. A number of eminent professors of Civil Engineering from India and abroad are participating. Participation in the symposium will be by invitation only. Those interested should contact Dr V. Ramakrishnan, Head of the Department of Civil Engineering, P.S.G. College of Technology, Coimbatore-4.

BRIEFS

Seminar

A seminar on 'Multi-storeyed Housing for Low Income Group' was held at the Central Building Research Institute, Roorkee on August 26, 1966. Many scientists, engineers, and architects from the Institute and the University of Roorkee participated and discussed various aspects of multi-storeyed housing. Talks on the following topics were given: (i) Design considerations for low cost multi-storeyed housing; (ii) Ventilation considerations in multi-storeyed buildings; (iii) Bricks for load bearing walls; (iv) Effect of design and specifications on cost of multi-storeyed buildings; (v) Daylighting in multi-storeyed residential flats; (vi) The cost of lifts in multi-storeyed buildings; (vii) Services in multi-storeyed buildings; (viii) Some thoughts on multi-storeyed housing for low income group; and (ix) Low-cost multi-storeyed housing (some social considerations).

CECRI, Karaikudi

The Institute participated in the exhibition 'Our India' organized recently by the Ministry of Information and Broadcasting at New Delhi. About 15 samples representing the achievements of the Institute were displayed. The following two inventions which won the Invention Promotion Board awards for the first half of the year 1966 were also on display: (i) Carbon elements for air depolarized cells; and (ii) vapour phase corrosion inhibitors and coated paper.

Scheme for Development of Specialized Instruments

The Central Scientific Instruments Organization has initiated a programme of establishing Development Centres with well established instrument manufacturing concerns for developing certain specialized instruments. Already two such centres are functioning at (i) M/s Oriental Science Apparatus Workshops, Ambala Cantt; (ii) M/s Instruments & Chemicals Pvt. Ltd, Ambala City.

The scheme for establishing Development Centres provides that the Centres may be set up by manufacturing establishments as far as possible in their own premises, and the CSIO will give general guidance and also financial assistance to the extent of 50 per cent of their expenses. The following is a representative list of instruments that could be taken up for development at these Centres:

Electronic blood pressure machine, Special type of transducers for intra-cardiac pressure, Wave analyser, Transistor curve tracer, Q Meter, Wide range R.C. oscillators, Transistor tester, Function generator, Bellows made from brass and bronze, Fluid flow regulating valves, Small 1/100–1/500 H.P. split phase motors, Pressure and displacement transducers, Synchronous instrument motor for constant paper drive, Gas analyser (for CO, CO_2, and CH_4), Binoculars, Refracting telescope 6″, Stereomicroscope, Research microscope, Corneal and ear operating microscope, Profile projector, Photometer, Flame photometer, UV spectrograph, UV and visible spectrophotometer, Autocollimator, Precision spherometer, Research optical bench.

For terms and conditions for establishment of the Centres, Scientist-in-Charge, SPDL Division, CSIO, Chandigarh, may be contacted.

CSIO, Chandigarh

Mr F. Suter and Mr H. Lutz, Swiss Experts, Indo-Swiss Training Centre, CSIO, Chandigarh, were relieved of their duties on August 15, 1966, on completion of their assignments under the agreement between CSIR and the Swiss Foundation for Technical Assistance.

NCL Annual Report, 1965–66

The Annual Report of National Chemical Laboratory, Poona for the period 1965–66 has been published. The report (Pp. x+127) includes a brief resume of the work on various research projects of the Laboratory under the subject heads: Theoretical investigations on solid state and molecular physics; Materials for solid state devices; Thin films; Crystal and molecular structures; Thermodynamics and kinetic studies; Catalysis; Synthetic inorganic chemistry; Physico-analytical chemistry; Natural organic products; Synthetic organic chemistry; Physical organic chemistry; Microbiology; Growth of plant cells; Enzymes; Physico-chemical studies of polymers; Ion exchange resins; Industrial polymers; Surface coatings; Rubber; Grafting on cellulose; Process development; Process designs; Chemical engineering studies; and Miscellaneous work. Besides, highlights on pilot plants and sponsored schemes are given. The appendices include: processes in production, processes released and awaiting production, processes on which technical know-how has been developed, projects completed, services rendered to outside parties, demonstrations, training, technical services, special fabrications, seminars, symposia, publications, Indian patents in force, and staff news.

STAFF NEWS

Appointments

Shri K. D. Sharma, Deputy Director, Central Glass & Ceramics Research Institute, Calcutta, has been appointed Deputy Director-in-Charge of the Institute with effect from Aug. 29, 1966.

Dr Kr. B. P. Singh, Scientist, NBG, Lucknow (July 11, 1966).

Shri R. K. Mathur, Scientist, RRL, Jorhat (Aug. 16, 1966).

Transfer

Shri R. C. Chandra, Exhibition Officer, VITM, Bangalore was transferred to BITM, Calcutta. Shri A. K. Sarkar, Commercial Artist of BITM joined in place of Shri R. C. Chandra at VITM (Sept. 19, 1966).

Resignation

Shri M. D. Khadkikar, Scientist, CSIO, Chandigarh (Sept. 7, 1966).

Deputations

Dr M. Narayana Rao, Scientist, CFTRI, Mysore, returned from Canada on July 26, 1966 after two years stay as a Fellow of the National Research Council at Nutrition Division of the Food and Drug Directorate, Department of National Health and Welfare, Ottawa.

Dr S. Mukerjee, Scientist, IIEM, Calcutta, participated in the Eleventh Pacific Science Congress at Tokyo during Aug. 22-24, 1966.

Shri K. L. Datta, Scientist, CBRI, Roorkee, visited Netherlands as a member of Indian Delegation of Architects and Planners invited by the Government of Netherlands to study housing, planning and reconstitution programmes in their country for five weeks.

Shri A. Bose, Officer-in-Charge, VITM, Bangalore, participated in the Eleventh Pacific Science Congress at Tokyo during Aug. 31 to Sept. 3, 1966 and presented a paper on 'Establishment of Science Museums in Rapidly Developing Countries'.

Shri J. E. Mannar, Scientist, NML, Jamshedpur, proceeded to France on Sept. 26, 1966 for 3-months training in the field of Operational Research in Iron and Steel Making Processes, under the Indo-French Technical Cooperation Agreement.

Nominations

Dr B. V. Subbarayappa, Scientist, RSPO, New Delhi—Convener, Committee for Framing Courses for the Teaching of History of Sciences at Various Levels in the Universities, National Commission for the Compilation of History of Sciences.

Dr A. Lahiri, Director, CFRI, Jealgora—Member, Coal Blending and Coking Research Sub-Committee, Jamshedpur.

Shri G. S. Chowdhury, Director, RRL, Bhubaneshwar—Member, Advisory Board for the Testing and Control Laboratory of the Government of Orissa.

Shri G. P. Mathur, Scientist, NML, Jamshedpur—Representative of the Laboratory, Standing Committee on Modernization, Mechanization and Training, Ministry of Mines and Metals.

Dr L. V. L. Sastry, Scientist, CFTRI, Mysore—Member, Sub-Committee on Anti-oxidants and Preservatives, Central Committee for Food Standards.

Dr T. Banerjee, Scientist-in-Charge, NML, Jamshedpur—Member, Bihar Mineral Advisory Council, Department of Mines and Geology, Government of Bihar; Geological Programming Board, Ministry of Mines & Metals.

Dr K. Bhaskaran, Scientist, CDRI, Lucknow—Member, Cholera Expert Group, Indian Council of Medical Research.

Dr A. B. Kar, Scientist, CDRI, Lucknow—Member, Experts Group of Scientific Aspects of Family Planning, Indian Council of Medical Research.

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RESEARCH PROGRESS

CGCRI, CALCUTTA

Effects of Oxides of Manganese and Iron on Properties of Glass—Investigations were carried out to study the effects of addition of oxides of manganese and iron on the physical and chemical properties of a typical sample of soda-lime-silica glass. Studies indicated that substitution of Na^+ ions by Mn^{2+} ions in equimolecular proportions resulted in decrease of high-temperature viscosity and coefficient of thermal expansion and increase of chemical durability. The effects were similar but less marked in the case of substitution of Ca^{2+} ions by Mn^{2+} ions. It had been possible to produce chemically durable glasses melting at comparatively low temperature by incorporating appropriate amounts of oxides of manganese and iron in the glass compositions.

IIP, DEHRA DUN

Laboratory Gas Chromatograph for Analysis of Light Ends—The Institute has developed a laboratory gas chromatograph which enables analysis of lighter ends in complex and very large boiling range mixtures like crude petroleum and coal-tar without the necessity of prior fractionation—a facility which is not provided even with most sophisticated gas chromatographs available commercially. This speciality has been achieved by careful design of a combination of the injection block and a pre-column which can be separately heated to any temperature up to 300°C., and can be easily dismantled for cleaning and refilling. It is possible to recover the higher boiling portion of the sample, if required. The gas chromatograph which works at room temperature has been used successfully at the Institute.

Improvement of Lamps to Burn Inferior Kerosine—The straight run kerosine obtained from Naharkotia crude is inferior in quality due to its low smoke point, and its upgrading entails about 40 per cent loss in production. About 90 per cent of the kerosine marketed in the country is used for domestic lighting. Investigations were, therefore, undertaken to improve the existing lamp designs to burn inferior kerosine. As a result of the studies, an inexpensive device has been developed which on incorporating in 'Deva' lamps increases the maximum initial candela from 0.27 to 0.58 in case of inferior kerosine, and from 0.65 to 0.85 in case of superior kerosine.

The Institute has also optimized the design parameters of table lamp burners, which now enable one to obtain 13 candela with inferior kerosine as against the normally obtained value of about 8 candelas.

Work on improvement of hurricane lamps, and designs of domestic kerosine cooking appliances to use inferior kerosine satisfactorily is in progress. It is estimated that possible use of inferior kerosine in domestic appliances without sacrificing performance would cut our kerosine imports by at least 25 per cent.

RRL, JORHAT

Vertical Shaft Kiln for Manufacture of Cement—A 30 tons/day capacity vertical shaft kiln for manufacture of cement, which was entirely fabricated from indigenous materials without any foreign technical assistance, was put into operation on September 7, 1966. The plant was found to work successfully; the product was completely

RRL, Jorhat—Vertical shaft kiln in operation

uniform and fully burnt. The quality of cement produced in the kiln conforms to the standard specification of cement produced in conventional rotary kilns. Further work towards the full automation of the plant is in progress.

The laboratory is now in a position to supply detailed technical know-how and design for vertical shaft plants having capacities between 20-200 tons/day.

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Dr Nitya Nand, Scientist, CDRI, Lucknow—Member, Advisory Committee on Indigenous Drugs, Indian Council of Medical Research.

Dr Y. Nayudamma, Director, CLRI, Madras—Member, Madras State Research Committee (Medical Research), Government of Madras.

Honours & Awards

Prof. S. R. Mehra, Director, and Shri T. K. Natarajan, Scientist, CRRI, New Delhi, have been awarded the Aimil Gold Medal for 1965 by the Indian National Society of Soil Mechanics and Foundation Engineering, for their paper entitled 'Foundation Treatment of Ore Handling Yard by Preloading with Vertical Sand Drains' presented at the 6th International Conference on Soil Mechanics and Foundation Engineering held at Montreal. The Medal is given annually by the Society to the author of the best paper published during the year.

Dr L. D. Kapoor, Scientist, NBG, Lucknow, has been selected President of the Pharmacognosy and Phytochemistry Section of the Indian Pharmaceutical Congress to be held at Bombay during December, 1966. Also, he has been appointed a guide for Ph.D. degree in Pharmacognosy and Plant Physiology, Banaras Hindu University, Varanasi.

Dr (Km.) Ishwari K. Kalani, NBG, Lucknow—Ph.D. (Poona University); thesis: *Studies in the taxonomy development, cytology, sexuality and chromosome morphology of some Indian Ascomycetes* (Guide: Prof. M. N. Kamat).

Shri B. G. Dhere, NCL, Poona—Ph.D. (Poona University); thesis: *Studies on thin films by electron diffraction* (Guide: Dr A. Goswami).

Km. H. M. Sayagaver, NCL, Poona—M.Sc. (Poona University), *Microbiology* (Guide: Dr M. R. R. Rao).

ISI Nominations

Shri S. K. Das Gupta, Engineer-in-Chief, CFRI, Jealgora—Convener, Coal Dust Sub-Committee of Mineral Fuel Sectional Committee.

Shri P. N. Kapoor, Scientist, NPL, New Delhi—Member: (i) Small Tools Sectional Committee; (ii) Pulleys and Belts Sectional Committee; and (iii) Pulleys and Fasteners Sub-Committee.

Shri Ram Prasad, Scientist, NPL, New Delhi—Member, (i) Optical Instruments Sub-Committee; and (ii) Material and Components for Instruments [illegible]-Committee.

Dr R. G. Singh, Scientist, NPL, New Delhi—Member, Medical Optical Instruments Sub-Committee.

Shri N. N. Singh, Scientist, NPL, New Delhi—Member, Air Conditioning and Refrigeration Appliances and Commercial Refrigeration Sub-Committee.

PATENTS

Filed

105895: *A process for the conversion of molten iron of various compositions to different grades of steel of employing air for oxidizing reactions*—B. R. Nijhawan, A. B. Chatterjee & J. Mohan, NML, Jamshedpur.

105930: *A new material for manufacture of roofing sheets, building boards, pipes and sanitary fittings*—K. L. Arora, Y. C. Gokhale & M. S. Iyengar, RRL, Jorhat.

106419: *A process for the production of hydrous or anhydrous lanolin (superfine grade or better) from wool grease*—S. K. Ghosh & B. S. Rawat, IIP, Dehra Dun.

106513: *Internal water flowing boat-ship*—K. G. Philip, ONGC, Dehra Dun.

106514: *Folding packing case*—K. George Philip, ONGC, Dehra Dun.

106776: *A new type of fermentation unit*—M. S. Kothari, RRL, Jorhat.

106804: *Improvement related to the manufacture of carboxy methyl cellulose*—D.S. Bendale, M.B. Mahajan & H.P. Khadilkar, NCL, Poona.

106805: *A sand sampler*—V.S. Aggarwal & S.S. Wadhva, CBRI, Roorkee.

106806: *Improvements in or relating to anode material and electrolyte in primary wet-cell of the leclanche type*—N. Subramanyan, M.G. Potdar & V.S. Kapali, CECRI, Karaikudi.

Accepted

95424: *Improvements in or relating to thermosetting resinous compositions*—S.P.R. Nair, M. Krishnan & R.T. Thampy, SRIFIR, Delhi.

95488: *Improvements in or relating to the construction of single shot batteries*—P.L. Joseph, M.A.V. Devanathan, B.A. Shenoi & V. Balasubramanian, CECRI, Karaikudi.

96133: *Anodic phosphating*—K.S. Rajagopalan, B. Dandapani & A. Jayaraman, CECRI, Karaikudi.

96341: *Improvements in or relating to the production of electrolytic manganese dioxide suitable as depolarizer for primary batteries*—V. Arvamuthan & S. Visvanathan, CECRI, Karaikudi.

96342: *Improvements in ice point apparatus for maintaining a constant temperature of 0°C.*—V.P. Wasan & T.D. Bansal, NPL, New Delhi.

96606: *Improvements in or relating to preparation of lithographic aluminium plates*—B.A. Shenoi, R. Subramanian & S. Chakrapani, CECRI, Karaikudi.

Norway

153612: *Processing of mammalian intestines*—S.K. Barat, CLRI, Madras.

UK

1043599: *An inexpensive chemical method of dicing a semi-conductor slice for the manufacture of transistor family devices*—K.S. Balain, CEERI, Pilani.

Sealed

90238: *A microscope eyepiece graticule for rapid determination of projected specific surface of particulate material*—S. Guruswamy, CMRS, Dhanbad.

90675: *Improvements in or relating to the manufacture of phosgene (carbonyl chloride)*—R.T. Thampy & S.R. Goel, SRIFIR, Delhi.

91430: *Improvements in or relating to manufacture of reconstituted mica*—Atma Ram & S.C. Roy, CGCRI, Calcutta.

91828: *Improvements in or relating to the preparation of sintered silver plates for batteries*—P. B. Mathur & N. Karuppannan, CECRI, Karaikudi.

91290: *Improvements in or relating to an apparatus for the measurement of gel-time of thermosetting resins*—A. Pande, M. Krishnan & S. K. Bhatnagar, SRIFIR, Delhi.

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CSIR NEWS

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BOARD AND GOVERNING BODY MEETINGS

Meetings of the Board of Scientific & Industrial Research and the Governing Body will be held at the Conference Room of the Ministry of External Affairs, South Block, New Delhi on Nov. 18 & 19, 1966 respectively at 9 a.m. both the days. Smt. Indira Gandhi, Prime Minister and President, CSIR, will preside.

The Society of CSIR will be meeting immediately after the Governing Body Meeting on Nov. 19, 1966.

A meeting of the Committee of the Board will be held at CSIR Secretariat, New Delhi on Nov. 17, 1966 at 10 a.m.

STAFF NEWS

Appointments

Drs K. D. Pant, L. M. Singh, J. C. Katiyar & Shri H. P. S. Chawla, Scientists, CDRI, Lucknow (Sept. 1, 1966).

Drs A. P. Bhaduri (Ford Foundation Scheme) & A. S. Dutta (National Institutes of Health Scheme), Scientists, CDRI, Lucknow (Sept. 1, 1966).

Dr Kusum Saxena, Scientist, ITRC, Lucknow (Sept. 1, 1966).

Drs A. K. Singh & (Smt.) P. Rajeswari, Scientist and Pool Officer respectively, CMERI, Durgapur (Sept. 15 & Oct. 1, 1966 respectively).

Drs M. N. S. Nayar & R. S. Thakur, Scientists, RRL, Jammu (Sept. 21, 1966).

Dr P. V. Krishna, Scientist, RRL, Jorhat (Sept. 24, 1966).

Resignations

Dr K. M. Pant & Shri J. P. Kalra, Scientists, RRL, Jorhat (Sept. 16 & 28, 1966 respectively).

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RESEARCH PROGRESS

CFTRI, MYSORE

A Technique for Improving the Keeping Quality of Eggs—The Institute has perfected a technique for improving the keeping quality of eggs. The technique consists in coating the eggs with an oil based on a petroleum product added with some fungi-static and bacterio-static agents. This is done by immersing the eggs placed in a specially prepared bamboo or wire basket in a drum or vessel containing the coating oil for 5 to 10 seconds. The basket is then taken out and placed on a drainage table or hung to a hanger for about an hour to drain off the oil. The oil is collected for reuse. A pedestal fan may be used at the time of drainage so that the eggs get dried up quickly and are ready for storage. The coating oil can be used for any length of time with occasional filtration and sterilization.

Efficacy of the technique in preservation of eggs in different seasons in different parts of the country has been tested. It is found that shell eggs when treated with the coating oil by this technique can be kept in good condition for about 4 weeks at room temperature, 12 weeks at 55°F. and 10 days at 100°F.

The technique also prevents fungus and mould contaminations of eggs. The cost of coating is estimated to be about 20 paise for 100 eggs. The equipment required for coating eggs can be easily fabricated and manually operated. The design for this is available at the Institute.

The technique is of special value to India in view of inadequate cold storage facilities, particularly during transport. The methods employed at present in preservation and packing of eggs are not very satisfactory, and 5-10 per cent of the eggs are spoiled due to microbial infection during transit. Besides, the internal quality of eggs also deteriorates when exposed to high humidity and temperature.

These defects can now be overcome, and the economic condition of the poultry breeders can be improved by the application of this technique.

Some of the industrial ventures have reported success in improving the keeping quality of eggs by adopting this treatment.

CFRI, JEALGORA

An Integrated Approach to Evaluation of Coal Washing Efficiency—The existing efficiency expressions which are now in wide use for evaluating the precision of any coal washing operation have one common limitation, that is, none of them takes into account both the quantitative and qualitative aspects of separation.

Two revised concepts of efficiency have been evolved. The one entitled 'Sharpness Index' defines the precision of a separating unit (washer) while the other termed as 'Integrated Efficiency' indicates the separation accuracy of the entire operation accounting for both machine (washer and ancillary circuit) and material (raw coal and washed products). In contrast to the conventional efficiency expressions which show either the quantitative or qualitative errors, the revised concepts reflect both the quantitative and the qualitative aspects of specific gravity separation of raw coal into different fractions.

Comparative figures of efficiency of nearly 50 washing tests conducted on pilot and commercial scales in India, USA, UK and Canada employing a wide variety of washing

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BRIEFS

Students' Seminar at BITM

The Second Competitive Students' Seminar on the subjects: Origin of Man, Physiological and Psychological Effects of Space Flight, and Life in Outer Space, was organized by BITM, Calcutta on Sept. 19, 1966 with an object to popularize science amongst school students.

As many as thirty-nine students from different reputed schools, in and around Calcutta, participated in the seminar. Many educationists, heads of schools and guardians of the students also attended. Prizes will be awarded to the winners, and certificates to all participants.

New Schemes at NCL

The following new schemes have been taken up:

(i) Wood phenolics with special reference to their use in chemotaxonomy, their role in decay prevention, their pharmacological properties, and their biosynthesis by tissue culture studies; (ii) Investigations on indigenous silica and silicates as well as on imported diatomite earth, preparation of calcium silicates, etc.; (iii) Radio opaque dyes; and (iv) Fabrication of electron diffraction camera.

CFTRI, Mysore

Dr Alfred Ginsberg, Assistant Director, Meat Division of the Department of Agriculture, New Zealand, gave a talk on 'Increasing awareness of food hygiene' at the Institute on Sept. 21, 1966, at a seminar jointly organized by the Institute and the Association of Food Technologists (India).

Survey of Jharia Coalfield

The nineteenth meeting of the Coal Survey Advisory Committee for the Jharia Coalfield was held at the Central Fuel Research Institute, Jealgora on Aug. 30, 1966 under the Chairmanship of Shri B H. Engineer, Chief, Raw Materials Division, Tata Iron and Steel Company. While reviewing the work undertaken during 1965 at the Jharia Coal Survey Laboratory, the Committee recommended that a survey on the occurrence of 'Jhama' or natural coke should be carried out in collaboration with the Geological Survey of India and Coal Board, in view of the successful results obtained from tests in commercial cupolas using Jhama instead of hard coke.

The Committee also recommended continuation of the survey of the No. VIII seam in the south-eastern region of the Jharia coalfield as the laboratory test results indicated the coal from this seam to be suitable for use as prime coking coal. If necessary the Geological Survey of India should also intensify their drilling in this region at depths.

Coal from seams in the Parbatpur Block, which was being prospected for development by the National Coal Development Corporation, is of very good quality. The Corporation plans to produce about 6,000 tons of coal per day in the beginning which will be stepped up later to 14,000 tons per day.

The Committee recommended further work to study the change of coal properties at depths (1,500 to 2,000 ft) so that fair projection could be made on the development of coal mines up to specific depths.

CFTRI Annual Report, 1964–65

The Annual Report of the Central Food Technological Research Institute, Mysore for the period 1964–65, has been published. The report is of special significance as it is the first one after the Institute's research programme was reorganized and placed on project basis. The main body of the report (Pp. xiv+180) is divided into two parts A & B. Part A includes information on progress of work on about 100 inter-disciplinary research projects grouped under the different subject heads: Storage of food grains; Cereals and pulses; Oilseeds and other protein foods; Fruits and vegetables; Fish, meat and eggs; Tea, coffee and arecanut; Spices; Industrial microbiology; Process development and engineering; Packaging and containers; Biochemistry; Nutrition and dietetics. Some details on the experimental methods and technological application have also been given. Part B includes information on other activities such as supply of products, analysis, etc., industrial research and consultancy services, design and fabrication of equipment, training programme, operational research, publication and documentation, besides, eight appendices. The appendices include lists of paper published during 1963–65, papers presented at symposia, conferences, etc., membership of committees, patented processes, non-patented processes and staff news. At the end, a complete list of projects in progress at the Institute has been given.

Special Publications

Singh, S. M. & Joseph George—Removal of stains from concrete floors. Building Digest No. 42, CBRI, Roorkee.

Pandya, M. H. & Shiam Lal—Doubly curved tile roofs. Building Digest No. 43, CBRI, Roorkee.

De, P. L. & Hajela, R. B.—Special bricks. Building Materials Note No. 6, CBRI, Roorkee.

Bose, T. K., Kalra, S. P. & Murthy, S. N. B.—Design charts for nitrogen plasma tube arc heaters. NAL Tech. No. TN-PR-2-66, NAL, Bangalore.

Subramanian, N. R. & Dwarkanath, G. S.—Hypersonic flow around a blunt body—Real gas effects. NAL Tech. Note No. TN-AE-30-66, NAL, Bangalore.

Gopinath, R.—On Maslen's solution for inviscid flow past blunt bodies. NAL Tech. Note No. TN-AE-31-66, NAL, Bangalore.

NAL, Bangalore

The offices of the National Aeronautical Laboratory have shifted from Jayamahal Road, Bangalore-6 to their new building at Kodihalli, Bangalore-17 with effect from Oct. 3, 1966.

Inventions Promotion Board Awards for CECRI Scientists

The Inventions Promotion Board has awarded cash prizes to six scientists of the Institute in recognition of their inventive work. The Board holds competition twice a year to encourage inventive talents in the country. The awards are as follows:

Rs 5,000—Collectively to Prof. K. S. G. Doss, Dr K. V. N. Rao and Shri A. K. Abdul Waheed for their work on the development of porous carbon elements for use in air-depolarized cells.

Rs 1,000—Collectively to Dr K. S. Rajagopalan, Shri N. Subramanyan and Shri M. Sundaram for their work on development of vapour phase corrosion inhibitor coated paper.

Members of the International Commission on Glass Visit CGCRI

A delegation from the International Commission on Glass consisting of 25 members from various countries visited the Central Glass & Ceramic Research Institute on Sept. 29, 1966, on their way back home from Tokyo where they attended the Annual Conference of the Commission and also a symposium on 'Defects in Glass'. The members of the delegation led by Dr P. Gillard, Honorary Treasurer of the Commission, were received by Dr Atma Ram, Director-General, Scientific & Industrial Research and Shri D. N. Sen, Chairman, Executive Council of CGCRI. They were shown round the Institute by the Scientist-in-Charge Shri K. D. Sharma.

Dr J. M. Stevels of the Netherlands, President of the Commission, expressed surprise that before visiting the Institute, they could not imagine that the Institute was so big and that it had such excellent record of achievements to its credit. The visit had prompted them to form a new idea about the headway that India was already making in glass technology in the international field and about the rapid stride that she was taking for attaining self-reliance in the field of science and technology of glass. He expressed confidence that within a few years, India would be able to develop her position among the technologically advanced countries of the world. He appealed for increased international cooperation among the glass scientists.

Visitors

Dr Masayuki Ikeda of the Public Health Laboratories, Kyoto University Medical School, Japan (Sept. 14–15, 1966), Dr Randall H. Thompson of the National Institutes of Health, USA (Sept. 14–16, 1966) & Prof. V. Bojnanasky of the Institute of Experimental Phytopathology and Entomology, Ivanka Pri Dunaji, Czechoslovakia—CDRI, Lucknow.

Mrs Themla Gondwa, Ministry of Community Development, Malawi, Central Africa (Sept. 16, 1966) & Dr A. M. Gede, Regional Adviser on Maternal and Child Health, WHO (Sept. 13, 1966)—CFTRI, Mysore.

Shri D. S. Rao, Head, Central Science Workshop, Department of Science Education, New Delhi, accompanied by Messers V. N. Smirnov & G. I. Protosovsky, Unesco Experts—CSIO, Chandigarh (Sept. 17, 1966).

Dr Donald McLean of National Physical Laboratory, Teddington, accompanied by Dr F. H. Taylor of British Council & Prof. Zdenek Eminger, Chief Technical Adviser, Branch Metallurgie, Unesco, Paris, accompanied by Mr Starosta, Czech Expert from Heavy Engineering Corporation, Ranchi (Dr Donald McLean also delivered a talk on 'Creep of Metals')—NML, Jamshedpur (Sept. 22-23, 1966).

CGCRI, Calcutta—Members of the Delegation of the International Glass Commission visiting the Institute

Mr W. Kindler, Director, M/s Wild Heerbrugg Ltd, Switzerland and a member of the Executive Council of the Swiss Foundation for Technical Assistance—CSIO, Chandigarh (Sept. 23, 1966).

Prof. K. V. Saprykin, Unesco Expert, Indian Institute of Technology, Bombay—CEERI, Pilani (Sept. 26, 1966). He gave a talk on 'Bandwidth Relation with Coefficients of Non-linearity in Scanning'.

Mr. H. E. Jones Nagy, Ambassador, Hungarian Peoples Republic—CBRI, Roorkee (Sept. 30, 1966).

RESEARCH PROGRESS

Contd from p. 1, *col.* 3

systems have been evaluated both by conventional expressions and the proposed expressions. They show that while the use of the values of Sharpness Index has certain advantages over Imperfection Values in so far as they are expressed on percentage basis and take into account both quantitative and qualitative factors of any separation, the values of Integrated Efficiency can be more useful for any comparative study, as both yield errors, and ash errors are readily reflected in them.

Statistical Control on the Performance of a Central Washery—Most of the Central Washeries in India have been designed to draw their feed supplies from a large number of small collieries which mine a wide range of coal seams having different washability characteristics. This heterogeneous character of the feed to a Central Washery poses a number of problems for its efficient treatment in the washery aiming at products with specified quality. Some statistical techniques have been developed to solve these problems. A recent study on the performance of some of the Central Washeries in India, carried out jointly by the coal preparation technologists and an operational research team of the Institute, has established the soundness of these techniques and opened out possibilities for better control in such washery operations.

Some of these techniques relate to (i) control on supply of raw coal, (ii) homogenization of feed, (iii) operational conditions and efficiencies of washing units, and (iv) quality control of the washed products.

Applying these techniques, the Institute is carrying out techno-economic survey and performance study of some of the existing washeries at the instance of the Ministry of Steel & Mines.

CGCRI, CALCUTTA

Mica as a Potassic Fertilizer—Mica waste, which is available in plenty in India, contains about 9 per cent potassium. By certain chemical treatments, mica waste can be converted into useful potassic fertilizer. Thus, when mica waste is heated with calcium sulphate or ammonium chloride, potassium sulphate and potassium chloride are respectively formed more or less quantitatively. These as such can be used as manures. Otherwise, crude potassium sulphate and muriate of potash can be extracted with water from the heated mass and used as manures.

Field trials with crude potassium sulphate and muriate of potash prepared from mica waste indicate that they improve the quality and appearance of vegetable plants.

Experiments are also in progress for the economic preparation of potassium sulphate and muriate of potash from mica waste, using catalysts.

CBRI, ROORKEE

Ultrasonic Testing of Concrete—A problem which often confronts the construction engineer in the field is prediction of the quality of concrete in a structure. The ultrasonic pulse technique is generally suggested for the non-destructive testing of concrete *in situ*. So far, it has not been possible to predict the strength of concrete in a structure within reasonable limits by the ultrasonic pulse technique. However, field tests conducted by the Institute indicate that the zones containing honeycombing and voids in a structure can be detected by this method. In the other zones a comparative assessment of the quality of the concrete is possible. Recently, the Institute conducted ultrasonic testing of concrete *in situ* for the Fertilizer Corporation of India, Namrup (Assam).

STAFF NEWS

Contd from p. 1, col. 1

Dr K. E. Eapen, Scientist, CFTRI, Mysore (Sept. 30, 1966).

Retirement

Shri B. H. Krishna, Scientist, CFTRI, Mysore (Sept. 18, 1966).

Deputations

Dr M. S. Iyengar, Director, RRL, Jorhat, proceeded to Poland on Sept. 24, 1966 as Leader of a Scientific Delegation to various Polish research institutions and industries to discuss the possibilities of scientific collaboration between Poland and India under (i) the Protocol for Scientific Cooperation with foreign countries by the Council of Ministers of the People's Republic of Poland and (ii) Exchange Programme for Scientific Cooperation between CSIR and Polish Academy of Sciences. He will also be visiting the French Institute of Petroleum, Paris, for discussing the details of collaboration programme on production of protein from petroleum hydrocarbons, and a few scientific institutions in London.

Shri L. V. Kannan, Scientist, CDRI, Lucknow, resumed duty on Sept. 12, 1966 on completion of his deputation to Czechoslovakia for a long-term post-graduate course on 'Modern Problems in Biology' at Prague sponsored by Unesco.

Sarvashri A. C. Shipstone & M. R. Kutty, Scientists, CDRI, Lucknow, proceeded to Czechoslovakia on Sept. 30, 1966 for a long-term post-graduate course on 'Modern Problems in Biology' at Praha, under Unesco.

Dr S. Mukherjee, Scientist, IIEM, Calcutta, proceeded to USSR on Oct. 4, 1966 for a 3-week study tour under Indo-USSR Cultural Exchange Plan. He will be visiting the laboratories engaged in live vaccine work.

PATENTS

Filed

106808 : *Improvements in or relating to the preparation of mixed oxide ceramic compositions*—M. N. Sankarashana Murthy & A. P. B. Sinha, NCL, Poona.

106819 : *Ice shaving machine*—T. D. Bansal, V. P. Wasan & S. S. Kalra, NPL, New Delhi.

106964 : *Improvements in couplers for beam plasma amplifiers*—Amarjit Singh, K. C. Gupta & H. S. Dewan, CEERI, Pilani.

107057 : *A new method for manufacturing barium titanate material with improved characteristics*—T. V. Ramamurti, C. V. Ganapathy, Aftab Ahmed, S. C. Gupta & T. R. Menon, NPL, New Delhi.

107124 : *A process relating to the production of benzaldehyde from toluene, a constituent of coke-oven benzole and petroleum naphtha*—S. K. Ray, G. N. Kulsrestha, G. S. Murty, H. S. Rao & A. Lahiri, CFRI, Jealgora.

France

75407 : *An integrated process* (Oleo Flotation) *for upgrading and dewatering of small coal*—A. K. Chakravarti, J. Chattopadhyay, G. G. Sarkar & A. Lahiri, CFRI, Jealgora.

Accepted

91134 : *Improvement in or relating to a precision temperature controller for use with electrical resistance furnaces up to 1600°C.*—K. P. S. Kumar & A. P. Chowdhury, NML, Jamshedpur.

96605 : *Improvements in or relating to spray drying technique with special application to electrolytic recovery of magnesium, misch metal and the like*—G. Janakiraman, P. S. Desikan & V. Aravamuthan, CECRI, Karaikudi.

96661 : *Method of separating iron from ilimenite*—(Km.) S. Samanta, V. S. Sampath & P. P. Bhatnagar, NML, Jamshedpur.

Sealed

90677 : *A new method for the preparation of formic acid*—H. G. Vartak, S. G. Patil & S. V. Paranjape, NCL, Poona.

92526 : *Improvements in or relating to pitch mastic compositions*—C. G. Swaminathan, B. C. Mazumdar & B.S. Mongia, CRRI, New Delhi.

92977 : *Improvements in or relating to the manufacture of hexachloroethane*—S. P. Mukherjee, M. Goswami, S. Soundararajan, N. Sadasivan, Ranjit Kumar Sen & L. K. Doraiswamy, NCL, Poona.

93726 : *Improvements in or relating to the manufacture of reactive surkhi*—N. R. Srinivasan, M. L. Bhatia, R. K. Ghosh & Sita Ram Mehra, CRRI, New Delhi.

95076 : *Improvements in or relating to the manufacture of lignin*—G. M. Vyas, D. S. Bendale, M. B. Mahajan, J.L. Bose, B.D. Modi, H.R. Sonawane & D.C. Bigg, NCL, Poona.

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RN 4212/5

CSIR NEWS

VOL. 16 NOVEMBER 15, 1966 : KARTIKA 24, 1888 NO. 21

8-12-66
LIBRARY

Meeting

The Executive Council Meeting of Regional Research Laboratory, Jorhat, will be held on Dec. 14, 1966.

Seminar

A seminar on 'Work Flow in Special Libraries, University Libraries and Government Libraries' is being organized by the Indian National Scientific Documentation Centre, New Delhi, during Nov. 21–24, 1966. About 150 delegates from Delhi and outside are participating.

Symposium

A symposium on 'Community Water Supply and Waste Disposal' will be held during Dec. 19–21, 1966 at the Central Public Health Engineering Research Institute, Nagpur (*CSIR News*, Vol. 16, No. 12). The symposium is expected to give an ideal opportunity for different groups of people concerned with and responsible for community water supply and waste disposal to discuss the various aspects of the problem. Those who are desirous of attending should contact Dr G. J. Mohanrao, Chairman, Symposium Accommodation Committee, CPHERI, Nagpur, for accommodation.

Refresher Course

The Corrosion Advisory Bureau of Metals Research Committee is organizing a four-day lecture-cum-demonstration course on 'Corrosion and its Prevention' at the Marine Corrosion Research Station, Digha, during Nov. 22–25, 1966. The course intended to focus the fundamental and practical aspects of corrosion prevention has been framed specially for technicians and maintenance engineers in industry. About twenty persons from different engineering and chemical industries will be attending the course.

RESEARCH PROGRESS

CSMCRI, BHAVNAGAR

Light Magnesium Carbonate from Sea Bittern—A process has been developed for the production of light magnesium carbonate from sea bittern, which were hitherto wasted. The sea bittern solution of requisite strength is treated with decolorized and upgraded sambhar bittern solution under controlled conditions to precipitate magnesium carbonate. Alternately soda ash can also be used in place of sambhar bitterns. The precipitated mass is filtered and washed. Air is bubbled through the slurry. The precipitate is then filtered, washed thoroughly and dried before pulverizing.

The process has been studied on a semi-pilot plant scale and 80 per cent conversion efficiency has been obtained. The plant having a capacity of one ton per day is estimated to cost about Rs 2.5 lakhs. The process has already been released to the industry.

CMRS, DHANBAD

Testing of Detonators—Investigations were carried out for examination and testing of indigenously made instantaneous copper electric detonators with A. S. A. priming charge and P. E. T. N. base charge, for use in gassy mines where there is a danger of ignition of the gas. The detonator tubes were made of 95 per cent copper and 5 per cent zinc. The tests were carried out in a specially fabricated water cooled steel cubical of 27,000 cc. capacity using an explosive mixture of methane in air in the range of about 9 per cent by volume. The whole design, arrangement and set-up was conceived and fabricated at the Station. The testing consisted in firing each of the detonators, one at a time, in the explosive methane-air mixture

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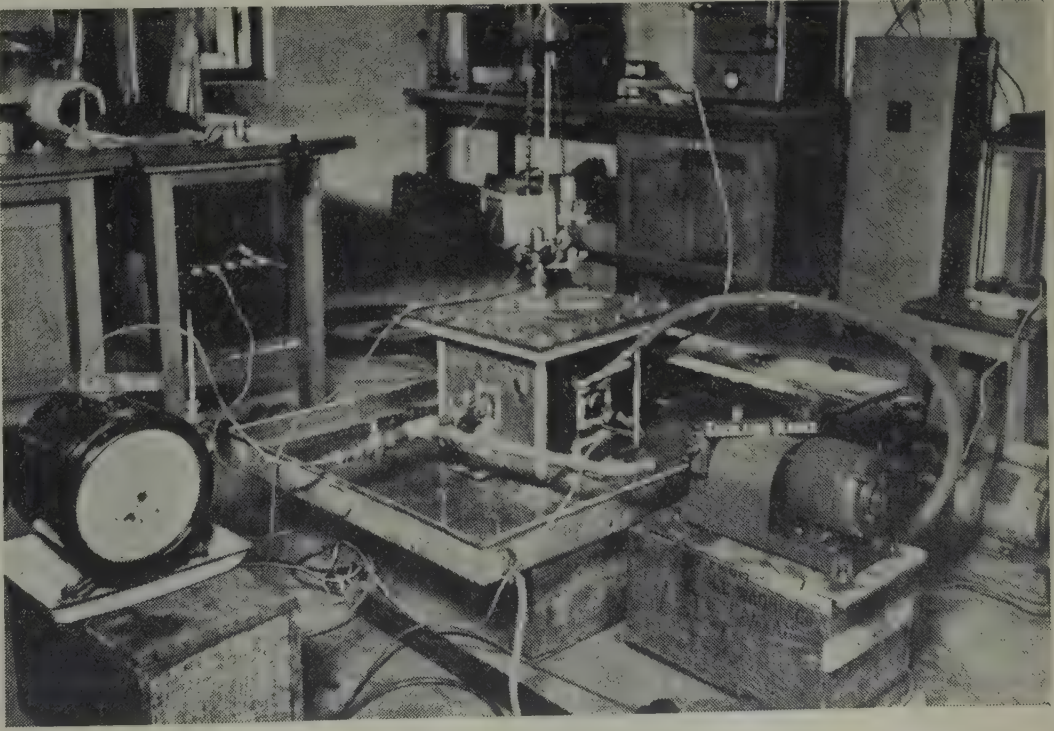

CMRS, Dhanbad—Set-up for testing of detonators

BRIEFS

The Wealth of India: Raw Materials, Vol. VII (N–Pe)

This is the latest addition to the series of Wealth of India, an encyclopaedic publication of Raw Materials and Industrial Products of India, brought out by the Publications & Information Directorate. The volume seventh in the Raw Materials series, covers the letters N–O–P (up to Pe). It contains 301 entries —294 on plants, 4 on animals and animal products, and 3 on minerals. The major articles are on Tobacco (*Nicotiana*), Rice (*Oryza*), Opium (*Papaver*), Pearl Millet (*Pennisetum*), Oysters and Petroleum. Other important entries, particularly of economic significance are:

Dyes and Tans: *Oldenlandia, Onosma, Oroxylum, Paeonia* (Peony), *Peltophorum*; Essential Oils: *Narcissus* (Jonquil), *Nyctanthes* (Night Jasmine), *Ocimum* (Basil), *Onychium, Pandanus* (Kewda), *Pelargonium* (Geranium); Fats and Oils: *Olea* (Olive); Food and Fodder: *Pachyrrhizus* (Yam Bean), *Panicum, Paspalum* (Kodo Millet); Gums, Latex and Resins: *Palaquium* (Gutta-Percha); Fruits: *Passiflora* (Passion Fruits), *Persea* (Avocado); Medicinal Plants: *Nardostachys* (Indian Nard), *Nerium* (Indian Oleander), *Nigella* (Kalajira), *Onosma, Oxalis* (Wood-Sorrel), *Panax*; Timber and Forest Products: *Neolitsea, Oroxylum ougeinia* (Sandan); Vegetables: *Pastinaca* (Parsnip), and *Petroselinum* (Parsley) among plant materials; *Parasitic Worms* among animals and animal products; and *Nickel* among minerals.

Concise and authoritative accounts on all the entries have been given. The volume, like its predecessors, is mainly concerned with botanical subjects which constitute 98 per cent of the text. The plants, particularly of economic significance, are dealt in sufficient details such as genera, species, occurrence, cultivation, diseases and pests, harvesting and yield, curing, chemical composition, utilization, marketing and trade. An index of names in Indian languages, regional and trade names, and common english names is appended for ready reference. The volume (Pp. xxviii+330+ix) is illustrated with 9 full page plates and 140 text figures. It is priced Rs 30 (Sh. 60).

Special Publications

Shah, M.M.— Air cycle refrigeration at present and in future. CMERI Report M_2, CMERI, Durgapur.

Venkataraman, V. — Surface roughness measurement. CMERI Report M_3, CMERI, Durgapur.

Swamy, S.G.N. — Prospects for ultrasonic testing of welds in India. CMERI Report M_5, CMERI, Durgapur.

CPHERI, Nagpur

At the instance of the Hyderabad Municipal Corporation, the Institute installed a pilot plant high rate sludge digester at Amberpet as a first step in the direction of remodelling the Hyderabad Sewage Treatment Plant with a view to treating the entire quantity of city sewage and recovering useful products such as fuel gas for domestic consumption. The pilot plant was formally inaugurated on July 31, 1966 by the Deputy Mayor of the Hyderabad Municipal Corporation, Shri Rahmat Ali. The pilot plant with a capacity to treat one lakh gallons of waste per day is expected to give data on the design criteria of the various treatment units, economics of high rate sludge digestion and the actual quantity of gas that can be expected from the treatment plant.

CSIO, Chandigarh

Mr H. Thommen, Swiss Expert, Indo-Swiss Training Centre, CSIO, Chandigarh, was relieved of his duties on Oct. 5, 1966 on completion of his assignment under the agreement between CSIR and the Swiss Foundation for Technical Assistance.

Visitors

Prof. W. Kern, Director, Institute of Organic Chemistry, University of Mainz, West Germany—NCL, Poona (Sept. 15, 1966).

Dr Robert J. Rodin, Associate Professor of Biological Sciences, California State Polytechnic College, San Luis Obispo (Oct. 4, 1966) and Prof. V. Bojnansky, Institute of Experimental Phytopathology and Entomology of the Academy of Sciences, Ivanka Pri Dunaji, Czechoslovakia (Sept. 29, 1966)—NBG, Lucknow. Dr Rodin delivered an illustrated lecture on 'The Plant Communities of California.'

Prof. J. Krey, Institute Fur Meereskunde, University of Kiel, Germany, Dr G. P. Wells, University College, London, Dr A. K. Ganguly, Atomic Energy Establishment Trombay, Bombay; Prof. Michitaka Uda, Tokyo University, Japan—NIO, New Delhi (Sept. 1966).

Prof. G. A. Dubov, Visiting Professor from USSR at the Applied Physics Department, Govt. Engineering College, Jabalpur (Oct. 10, 1966) and Dr Kartar Singh, Director, Defence Science Laboratory, Delhi—CSIO, Chandigarh (Oct. 12, 1966).

Dr Joseph Dilorenzo, Acting Director, Office of the International Affairs, Agency for International Development, Washington, CFTRI, Mysore (Oct. 13, 1966).

The Eighth Japanese Youth Goodwill Mission led by Mr Takaji Sakai—CFTRI, Mysore (Oct. 16, 1966).

Prof. Howard W. Emmons, Division of Engineering and Applied Physics, Harward University, USA—NAL, Bangalore (Oct. 15–18, 1966). He gave a talk on 'Some Aspects of Two Phase Flow'.

STAFF NEWS

Appointments

Dr M. K. Das & Shri N. V. Pandit, Scientists, CMERI, Durgapur (June 1 & Sept. 7, 1966).

Drs A. K. Singh & S. Ramaseshan, Scientists, Smt. P. Rajeswari, Pool Officer, NAL, Bangalore (Sept. 15, Oct. 5 & 1, 1966, respectively).

Dr K. R. Khanna, Scientist, NBG, Lucknow (Oct. 1, 1966).

Resignations

Sarvashri P. R. Prabhakar, V. Gurunathan & P. Sampath, Scientists, CMERI, Durgapur (Aug. 20, Aug. 29 & Sept. 17, 1966, respectively).

Sarvashri A. N. Mohan & P. Jagannadha Rao, Scientists, NAL, Bangalore (Sept. 15 & 30, 1966, respectively).

Termination

Shri C. T. Madapa, Engineer Officer, NAL, Bangalore (Sept. 19, 1966).

Deputations

Shri R. S. Mehta, Director and Dr J.S.S. Lakshminarayanan, Dr G. J. Mohanrao, Scientists, CPHERI, Nagpur, participated in the 3rd International Conference on 'Water Pollution Research' at Munich, West Germany during Sept. 5–9, 1966. Shri Mehta was Vice-president of the Conference. Dr Mohanrao presented a paper on 'Photo-film Industry Wastes'.

Dr B. D. Tilak, Director, NCL, Poona, participated in the 36th International Conference on Industrial Chemistry held at Brussels during Sept. 10–21, 1966. Dr Tilak also visited a few chemical industries and research laboratories in UK, Switzerland, Germany and UAR, and delivered lectures at universities and research centres.

Shri M. A. Ramaswamy, Scientist, NAL, Bangalore, proceeded to USA on Sept. 9, 1966 for post-graduate research study for 3 years at the California Institute of Technology.

Shri S. A. Hussainy, Scientist, NAL, Bangalore, proceeded to UK on Sept. 23, 1966 for 3 months training in Thermo-elasticity at the School of Engineering, Bristol College of Science and Technology, under a programme of Exchange of Visits of Young Scientists between India and UK.

Dr J. S. S. Lakshminarayanan, Scientist, CPHERI, Nagpur, returned on Sept. 27, 1966 after completion of his training in France for 13 months under Indo-French Technical Cooperation Agreement.

Shri K. Sridhara, Scientist, NAL, Bangalore, proceeded to UK on Sept. 28, 1966 for 14 months training in Propulsion under UN Special Fund Aid Programme.

Shri B. K. Guha, Scientist, NML, Jamshedpur, resumed duty on Oct. 10, 1966 after completion of six months training in the field of 'Alloy and Special Steel Metallurgy' in Canada under Colombo Plan.

Dr O.P. Babbar, Scientist, CDRI, Lucknow, proceeded to UK on Oct. 15, 1966 for training under Colombo Plan.

Shri B. C. Gulati, Scientist, CIMPO Zonal Centre, Haldwani, proceeded to Bulgaria on Oct. 16, 1966 for 8-week tour to acquaint himself with the latest techniques in the field of cultivation of medicinal plants.

Nominations

Dr M.L. Dhar, Director, CDRI, Lucknow—Director, Board of Directors, Hindustan Antibiotics Ltd.

Dr C.R. Krishna Murti, Scientist, CDRI, Lucknow—Member, Biochemistry Experts Group, Indian Council of Medical Research, New Delhi.

Shri G.S. Chowdhury, Director, RRL, Bhubaneshwar — Member, State Mineral Advisory Board, Government of Orissa.

Shri B. S. Kesavan, Director, Insdoc, New Delhi—Member, Reconstituted Council of National Library, Calcutta, for a period of three years.

ISI Nomination

Shri P. P. Bhatnagar, Scientist, NML, Jamshedpur—Chairman, Composition of Ferro-Alloys Sectional Committee.

Honours & Awards

Dr P. K. K. Nair, Scientist, NBG, Lucknow, attended the Second International Conference on Palynology held at Utrecht, Netherlands during Aug. 29–Sept. 3, 1966 and acted as Chairman of one of the sessions. Dr Nair was elected a Member of the International Working Group of Palynologists as also one of the Sub-committees of the Group.

Shri D. P. Sengupta, Scientist, CBRI, Roorkee, has been opted as a Member of the Civil Engineering Division of the Institution of Engineers (India), Bengal Centre.

Shri B. D. Dasare, CSMCRI, Bhavnagar—Ph.D. (Poona University); thesis: *Studies on polymeric materials for specific ion removal* (Guide : Dr N. Krishnaswamy).

Following staff members of NCL, Poona, received Ph.D. degree.

Shri T. D. Sakore (Poona University); thesis: *The crystal and molecular structure of p-nitrobenzoic acid by X-ray diffraction* (Guide: Dr L. M. Pant).

Shri K. C. Srivastav (Poona University); thesis: *Studies in azulenes and related compounds* (Guide: Dr Sukh Dev).

Smt. S.A. Patwardhan (Bombay University); thesis: *Azulenes and related substances* (Guide: Dr Sukh Dev).

Shri R. V. Pachhapurkar (Poona University); thesis: *Chemistry of polyisoprenoids* (Guide: Dr C. R. Narayanan).

Shri S. S. Deshmane (Bombay University); thesis: *Chemistry of sugarcane wax* (Guide: Dr Sukh Dev).

Shri R. G. Khurana (Poona University); thesis: *Chemistry of lac resin* (Guide: Dr Sukh Dev).

Shri P. G. Sharma (Poona University); thesis: *Some studies in fatty acids series* (Guide: Dr Sukh Dev).

Shri S. C. Bisarya (Agra University); thesis: *Terpenoids* (Dr Sukh Dev).

RESEARCH PROGRESS

Contd from p.1, col. 3

which was carefully controlled. The required quantity of gas was metered into the steel cubical and a circulating blower was used to mix it with the air inside. The composition of the mixture was checked and the detonator was placed to reach the centre of the cubical and fired. The ignition of gas resulting from firing of the detonator was detected by the characteristic rise in pressure produced which was recorded on a special pressure recording instrument mounted on the top of the cubical. In case of ignition inside the cubical, the pressure recorded was high while in case of no ignition it was low. After the firing of each detonator, when no ignition occurred, the explosive gas contained in the cubical was ignited by a special short-circuit device. A check test was carried out from time to time with other detonators not intended for use in gassy mines which did produce ignition. The cubical was recharged with fresh mixture for each of the detonators.

Tests on as many as 5,000 indigenous detonators using this procedure, carried out during 33 days from sun-rise to sun-set, have shown that the detonators can be safely used in gassy mines. The detonators are, therefore, expected to go into production shortly. It is expected that this would lead to a saving of over Rs 3 crores in foreign exchange being spent annually on importing these detonators.

CMERI, DURGAPUR

Dynamic Balancing Machine—The design of a dynamic balancing machine for measurement of out-of-balance forces in rotating machine elements like shafts, rotors of motors has been developed. The machine can determine the amplitude of vibration caused by out-of-balance forces and also the phase angle. The first model has been designed to balance rotors upto 100 kg. The machine would be commercially produced by M/s Industrial & Agricultural Engg. Co. (Cal) Pvt Ltd, Calcutta.

NML, JAMSHEDPUR

Recovery of Nickel from Low-grade Siliceous Ores—Studies were carried out on recovery of nickel by roast reduction followed by ammoniacal leaching from the low-grade siliceous ores of Assam containing 0.65 per cent NiO, 38.34 per cent SiO_2, 33.14 per cent MgO and 10.86 per cent Fe_3O_4 at the instance of the Geological Survey of India. The ore could be effectively reduced in the presence of hydrogen at 750°C. The reduced ore was given a pre-conditioning treatment in strong ammoniacal solution for one hour to oxidize most of the iron and subsequent leaching at room temperature for the dissolution of nickel. Distillation of ammonia from the liquor resulted in complete precipitation of basic nickel carbonate which on heating produced nickel oxide and overall 68–70 per cent recovery of nickel was obtained.

IIEM, CALCUTTA

Optical Filter from Indigenous Materials — Optical filters (gelatine) for use in the photo-electric colorimeters in the visible range (400–700 mμ) of spectrum have been developed mostly from indigenous sources at a price level less than one-fourth of the current market price of the imported material.

The filters were prepared by placing a very thin film of gelatine between two smooth glass plates. Different dyes and their mixtures were used to get different wavelength peak transmission. The transmission factor was controlled by the concentration and thickness of the film. The filters were tested and found to be of the same standard as those of the imported ones. Half band width varied from 25 mμ to 80 mμ throughout the range. Samples kept under observation for a period of 18 months were found unaffected by fungus.

PATENTS

Filed

105686: *A process relating to the production of ortho and para-xylene from coke-oven or naphtha based meta-xylene cuts or meta-xylene, interconversion of the three xylene isomers and isolation of the constituents from the reaction products*—R. N. Bhattacharya, N. V. R. A. Rao, G. S. Murty, H. S. Rao, N. G. Basak & Adinath Lahiri, CFRI, Jealgora.

105732: *Improvement in the process for the preparation of desiccant from gypsum*—M. A. Hai, E. R. Saxena & G. S. Sidhu, RRL, Hyderabad.

106803: *Improvements in or relating to method of cutting ceramic rods or tubes* NPL, New Delhi.

106807: *A new manganese dioxide mix for oxygen depolarised cathodes*—M. A.V. Devanathan, V. Aravamuthan, N. Ramasamy and S. Venkatesan, CECRI, Karaikudi.

106820: *Improvements in or relating to the fabrication of cuprous chloride cells*—P. B. Mathur, R. Seth, K. Dakshinamurthi, P. N. N. Namboodiri & N. Venkatakrishnan, CECRI, Karaikudi.

106906: *An improved method for removal of iron and upgrading ferringinous chrome ores and other low grade ferruguious ores* — R. N. Misra, P. V. Viswanathan & P. P. Bhatnagar, NML, Jamshedpur.

107058: *An Improved load cell* — K. G. R. S. Jain & D. D. Sahdev, CBRI, Roorkee.

107244: *A process for the preparation of isothiocyanates of biological interest*–R. N. Iyer, (Km.) Ranjana Saxena & J. C. Katiyar, CDRI, Lucknow.

West Germany

C40170 V1a/1a: *An integrated process (Oleo Flotation) for upgrading and dewatering of small coal* — A. K. Chakravarti, J. Chattopadhyay, G. G. Sarkar & A. Lahiri, CFRI, Jealgora.

Accepted

96017: *Production of high purity iron powder* — S. S. Dhanjal, P. K. Gupte & B. R. Nijhawan, NML, Jamshedpur.

96421: *Improvements in or relating to the manufacture of benzoyl chloride by the reaction of benzotrichloride and benzoic acid* — I. K. Kacker, H. Dakshinamurty, G. S. Sidhu & S. I. Ahmed, RRL, Hyderabad.

96662: *Improvements in or relating to etching and decorative anodising of aluminium and its alloys*— B. A. Shenoi & (Km.) K. S. S. Indira, CECRI, Karaikudi.

96663 : *A new process for the manufacture of glycolic acid*—H.G. Vartak and S. G. Patil, NCL, Poona.

96690 : *Improvements in or relating to direct plating of copper on aluminium and aluminium alloys*—B. A. Shenoi, R. Subramanian, C. Balasingh & C. Lakshminarayanan, CECRI, Karaikudi.

96691 : *Improvements in or relating to electrodeposition of chromium-molybdenum alloys*—B. A. Shenoi & (Km.) K.S.S Indira, CECRI, Karaikudi

96709 : *Improvements in or relating to the production of misch metal*—V. Aravamuthan, K. Venugopal and T. P. Madhavan, CECRI, Karaikudi.

Sealed

U.K.

1026328 : *Direct preparation of wax-esters*—A. J. Pantulu, K. T. Achaya, G. S. Sidhu and S. H. Zaheer, RRL, Hyderabad.

NEW ZEALAND

138370 : *Processing of mammalian intestines*—S.K. Barat, CLRI Madras.

NEW PUBLICATION

The Wealth of India : Raw Materials, Vol VII (N–Pe)

Contains concise and authoritative accounts on 301 entries—294 on plants, 4 on animals and animal products, and 3 on minerals. The major entries are : Rice (*Oryza*), Tobacco (*Nicotiana*), Opium (*Papaver*), Pearl Millet (*Pannisetum*), Oysters and Petroleum.

Pp. xxviii+330+ix Price : Rs 30.00 (Sh. 60)

Demy 4to, 9 plates and 140 text figures

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CSIR NEWS

VOL. 16 NOVEMBER 30, 1966 : AGRAHAYANA 9, 1888 NO. 22

GOVERNING BODY DECISIONS

The Governing Body met on November 19, 1966 with Shrimati Indira Gandhi, the Prime Minister and President of the Council of Scientific & Industrial Research in the Chair. Shri M. C. Chagla, Minister for External Affairs was present by special invitation in the absence of Shri Fakhruddin Ali Ahmed, Vice-President of CSIR. The following are the important decisions:

1. A project for carrying out pilot plant studies on the manufacture of citric acid (50 kg./batch) by submerged fermentation at the Regional Research Laboratory, Jammu was accepted in principle.

2. An All-India Directory of Instruments and Manufacturers and Dealers of Instruments should be brought out by the Central Scientific Instruments Organization in association with the Directorate-General of Technical Development.

3. Financial assistance should be given to the Wool Research Association, Bombay and the Cement Research Institute of India, Bombay to the tune of 50 per cent of the annual recurring and capital expenditure.

4. Holding of a Convention of Research Workers under the Physical Research Committee was approved with the proviso that the need for reorienting the research schemes in terms of problems of food production, defence, import substitution and export promotion may be emphasized.

5. Seventy-five new Research Schemes were approved subject to availability of funds.

6. A sum of Rs 25,000 towards publication costs of the National Report for Upper Mantle Project by the Geophysics Research Board, was sanctioned.

7. Holding of the following symposia/seminar/conference during 1967 were approved:

(i) Symposium on 'Upper Mantle Project' (at the National Geophysical Research Institute, Hyderabad in collaboration with the Geological Survey of India, the Geophysics Research Board, the Indian Geophysical Union and the Geological Society of India); (ii) Symposium-cum-lecture programme on 'Millimetre and Submillimetre Wave Spectroscopy' (at the National Physical Laboratory, New Delhi in collaboration with the University of Delhi); (iii) Symposium on 'Site Investigations for Foundations' (at the Central Building Research Institute, Roorkee); (iv) Symposium on 'Scientific Results of the International Indian Ocean Expedition' (in New Delhi under the joint auspices of the Indian National Committee on Oceanic Research and National Institute of Sciences of India); (v) Symposium on 'Quality Control in the Construction of Roads and Runways' in combination with a Technical Conference of the Chief Engineers of the Centre and the States dealing with highways, Representatives of Engineer-in-Chief of Border Roads Organization and Chief Engineers of Municipal Corporations (at the Central Road Research Institute, New Delhi); and (vi) The Seventh Seminar on 'Electrochemistry' (at the Central Electrochemical Research Institute, Karaikudi).

The Committee of the Board of Scientific & Industrial Research met on November 17, 1966 with Dr S. Bhagavantam, Scientific Adviser to the Ministry of Defence in the Chair and considered matters to be placed before the Board meeting.

The recommendations of the Committee were placed before the Board which met on November 18, 1966 with Shrimati Indira Gandhi in the Chair. Welcoming the members to the 57th meeting of the Board, the President observed that while science had gone ahead in India, scientific temper was not in equal evidence as one would have liked after 20 years of independence. She reiterated her faith in science and urged the scientists to look at things not only from the scientific point of view but also from the point of view of the general needs of the country.

Shrimati Indira Gandhi expressed her appreciation of the work done in the cause of science by Shri M. C. Chagla, in his capacity as the Vice-President of CSIR. She expressed the hope that his advice and guidance will continue to be available to the Council and to the cause of science in the country.

The President also expressed appreciation of work done by Dr S. Husain Zaheer during his tenure as the Director-General, Scientific & Industrial Research.

The President extended a warm welcome to Dr Atma Ram, the new Director-General.

The meeting condoled the death of Prof. P. Maheshwari, F.R.S., who had been the Chairman of the Biological Research Committee and Member of the Board and Governing Body for a number of years.

Symposium

A symposium on 'Site Investigations for Foundation' will be held at the Central Building Research Institute, Roorkee during March 6–8, 1967. Papers covering the following aspects will be presented and discussed: Organization, planning and economics of site investigations; Methods and extent of investigation; *In situ* tests; and Special site investigations for specific purposes.

BRIEFS

India-GDR Seed and Plant Exchange

An agreement to exchange seeds and plants of all types, particularly the economic plants, was reached at a meeting between Dr Christian Lehmann, Director, Institute of Cultivated Plants, Gatersleben, GDR and Dr L. B. Singh, Director, National Botanic Gardens, Lucknow. Dr Lehmann, who was on a visit to the Gardens, was very happy at this outcome of his week-long stay there during Oct. 31 to Nov. 7, 1966 as it was of great mutual benefit to both the parties.

Dr Lehmann, who is in India as a guest of the Council of Scientific & Industrial Research, arrived at the Gardens on Oct. 31, 1966 and worked there for one week. The main purpose of Dr Lehmann's 3-month stay in India is to acquaint himself with the tropical and subtropical flora to select plants for introduction to his country as well as for the enlargement of the collection of economic plants at his Institute, and to get in touch with the Indian scientists working in the field of pure and applied botany.

IIP, Dehra Dun

A team of experts of the Unesco Consultative Commission for the UN Special Fund, consisting of Prof. P. J. Garner, Birmingham University, UK, Mr G. H. Visser, Shell Research Group, Holland, and Prof. Alexander G. Sardanashvilli, USSR, visited the Institute on Oct. 25, 1966. The Commission held discussions with the Director and senior scientists of the Institute on various aspects of work on refining, petrochemistry projects, etc.

CPHERI, Nagpur

The Institute undertook work on designs for water supply, waste water disposal, external and internal drainage system of a Bacon factory being established at Gannavaram near Vijayawada by the Animal Husbandry Department of the Government of Andhra Pradesh. The factory will be processing about 50 pigs per day and manufacturing some of the standard products like bacon, ham, canned goods and sausages. The Hyderabad Zonal Centre of the Institute after carrying out extensive investigations and on-the-spot study of the problem submitted a comprehensive report for providing these facilities. The equipment suggested do not involve any imported material. The FAO experts have approved these proposals and these are now being executed by the State Government.

Sorel Cement Tiles

A unit for the production of Sorel cement tiles has been set up at CSMCRI, Bhavnagar. The essential equipment are a solid mixer, a tapping stage, wooden racks and wooden moulds with polished base plates. The raw materials are burnt magnesite, magnesium chloride and fillers such as sand, saw dust and asbestos. The process consists in preparing a dry mixture of burnt magnesite, sand, saw dust and colouring matter and adding a solution of magnesium chloride. The wet mix is then cast into the moulds fitted with polished base plates. The tiles are removed after about 15 hours. The tiles have fine glossy surface, possess better mechanical properties than Portland cement tiles, require only two days for curing as against three weeks required for Portland cement tiles, and need no polishing with emery wheels.

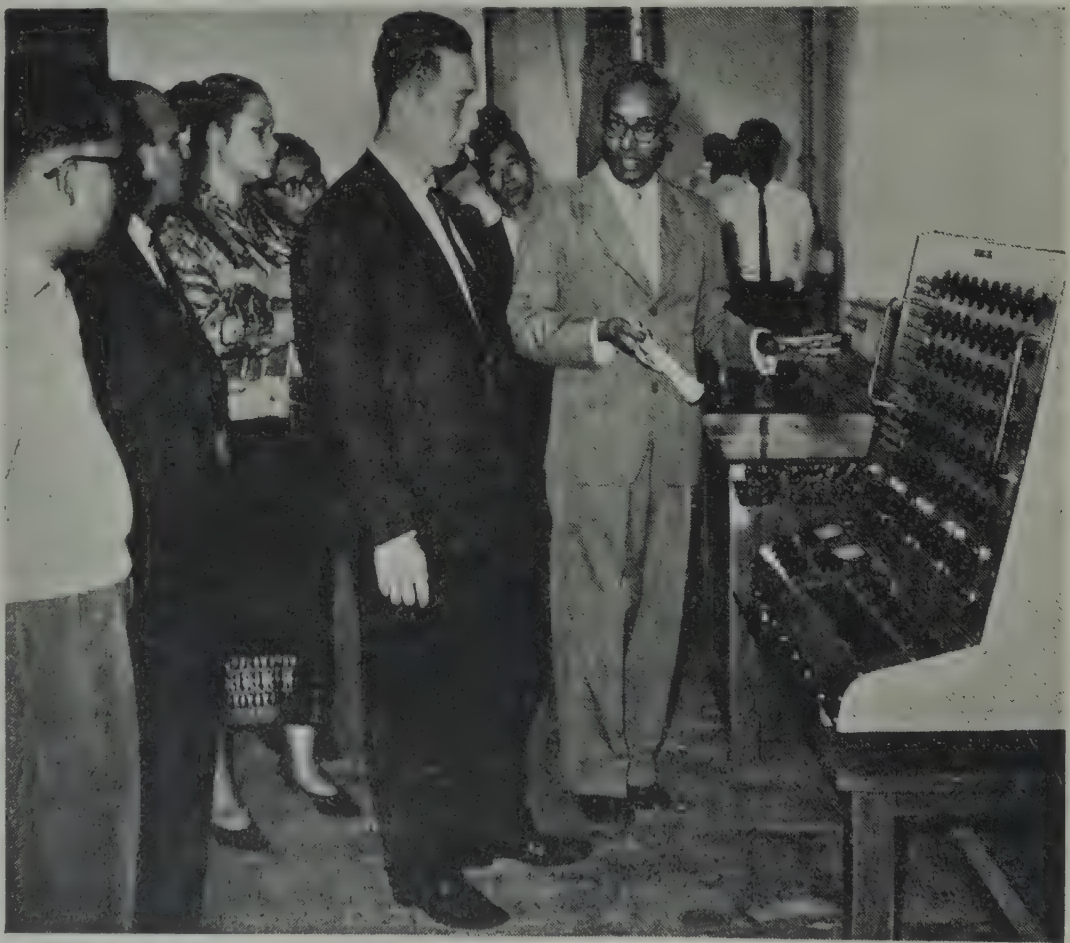
Sixty thousand tiles can be made in a year with an initial investment of Rs 50,000.

Conference

The Second Annual Technological Conference of the Bombay Textile Research Association, Bombay, is being organized during Dec. 5–6, 1966. Technical papers covering various aspects of textile technology and operations research will be presented and discussed.

CMRS, Dhanbad

The Crown Prince and Princess of Laos visited CMRS, Dhanbad on Nov. 13, 1966. They were received by Dr K. N. Sinha, Director, and other scientists, and were taken round the various laboratories of the Station. The distinguished visitors were apprised of the sustained efforts of the Station for increasing the efficiency of mining operation, ensuring safety in mines, and improving the health of miners.



CMRS, Dhanbad — The Crown Prince and Princess of Laos are seen listening to Dr K. N. Sinha, Director, who is explaining the Fluid Network Analyser in connection with mine ventilation

ATIRA, BTRA, SITRA Joint Conference

The Eighth Technological Conference jointly sponsored by ATIRA, BTRA and SITRA will be held at SITRA, Coimbatore during Dec. 15–17, 1966. Dr Atma Ram, Director-General, Scientific & Industrial Research will inaugurate the conference. There will be eight technical sessions: (i) Impressions of a study tour of Germany and Switzerland by the Directors of the Cooperative Research Association; (ii), (iii) & (iv) on Mechanical Processing—spinning, weaving, etc.; (v) & (vi) Physics; (vii) Chemistry and (viii) Operational Studies. In all, 25 papers—11 on mechanical processing, 8 on Physics, 4 on Chemistry and 2 on operational studies will be presented and discussed.

Annual Report of CRRI 1965–66

The Annual Report of Central Road Research Institute, New Delhi, for the year 1965–66 has been published. The report (pp. vii+79) presents, in brief, an account of the pattern of progress in research and the results obtained at the Institute during this period. The progress made on research and investigation projects by the different research divisions of the Institute, termed as sub-disciplines, is recorded separately for each of the sub-disciplines, viz. soils, flexible pavements, rigid pavements, roads, traffic engineering, economics and statistics, extension, information and operations research. Some of the major field projects in progress during the year are: Investigations on landslides towards suggesting corrective measures, investigations concerning economy and speed in the construction of roads in border regions; Investigations and economical specifications for road and airfield constructions; Investigations on certain foundation problems, and traffic and transportation studies for some major towns.

Other activities, namely, technical assistance rendered to many organizations, training imparted or received and deputations, symposia and conferences attended, new constructions, pilot-plant schemes in operation during the year, patents, etc. are summarized under their respective heads. The appendices contain other information such as equipment designed and fabricated, publications, staff, members of Executive Council, membership of the Institute on various national and international organizations.

Special Publications

Joseph George—Hard Board and Particle Board, Building Digest No. 44, CBRI, Roorkee.

Jain, V. K.—Precast Cellular Units for Floor and Roofs, Building Digest No. 45, CBRI, Roorkee.

Visitors

Dr S. V. Meyen, Geological Institute of the Academy of Sciences, USSR—NBG, Lucknow (Oct. 26, 1966).

Mr A. F. Daldy, Overseas Division, Building Research Station, UK—CBRI, Roorkee (Nov. 3, 1966).

Prof. J. Bronowski, Deputy Director, The Salk Institute for Biological Studies, California—RRL, Hyderabad (Oct. 31 to Nov. 1, 1966). He delivered two lectures: (i) A public lecture on 'Technology, the Modern Dilemma' and (ii) The Foundation Day Lecture for the year 1966 of the Laboratory. Later, Prof. J. Bronowski visited IIEM, Calcutta on Nov. 7, 1966 and delivered a lecture on 'New Philosophy of Biology'.

RESEARCH PROGRESS

NML, JAMSHEDPUR

Production of Phosphor Bronze Spring—Technical know-how for the production of phosphor bronze spring for use as electrical contact spring in railway signalling and other electrical equipments has been developed at the instance of Indian Railways. The process required critical control at each stage starting from the selection of raw materials to melting, casting, hot and cold working and finally stabilizing treatment to impart requisite properties to the finished product. Types of furnaces which can be used for the production, the nature of furnace atmosphere, the type of flux and the suitable pouring temperature, the amount of cold reduction suitable to impart desired spring temper for flat springs, and percentage of cold drawing to produce spring temper have been worked out. It has also been found that the alloys are better amenable to cold working than hot working. The know-how has been supplied to Indian Railways for their use.

RRL, JAMMU

Economic Production of Citric Acid—The submerged fermentation process, which is the most economical and modern method of manufacture of citric acid, was studied for its use on industrial level in the country. About 1000 *Aspergillus niger* cultures were screened for this purpose. As a result, six cultures which gave 80-85 per cent conversion of sucrose to citric acid were isolated. The strains isolated were found to be of great significance because of their insensitiveness to iron.

The laboratory studies are therefore being stepped up in 14-litre small fermentors. Steps have also been taken to instal a pilot plant unit to study the process in great detail to obtain data to design the commercial unit for manufacture of the acid.

The country's annual requirement of the acid which is required in large quantities for food and pharmaceutical industries is estimated at 1500 tons. The chemical is mostly imported.

NAL, BANGALORE

Traffic Counter—A simple instrument which helps in making an analysis of density of traffic on roads by way of counting the number of vehicles moving at any particular section of a road has been developed. The device is of special interest to those engaged in traffic control. The instrument comprises a pressure switch, a battery operated four-digit counter and a half-inch diameter tubing which can be laid across the road. The unit can automatically count the number of motor vehicles moving at all speeds. It distinguishes motor vehicles from other vehicles like carts, bicycles.

STAFF NEWS

Appointments

Dr S. V. Chandra, Scientist, ITRC, Lucknow (Sept. 12, 1966).

Dr Ram Pratap Singh, Scientist, NBG, Lucknow (Oct. 18, 1966).

Deputations

Prof. S. R. Mehra, Director, CRRI, New Delhi visited West Germany under a scheme for exchange of scientists between CSIR and the German Academic Exchange Service, for three weeks ending on Oct. 16, 1966.

Shri Bharat Bhushan, Scientist, RRL, Hyderabad returned from Hungary on Oct. 19, 1966 after a two-week visit to the Hungarian Research Institutes for exploring the fields of research of mutual interest under an agreement between CSIR and the Hungarian People's Republic.

Shri S. Bagchi, Deputy Director (Coal Survey), CFRI, Jealgora returned from Poland on Oct. 20, 1966 after two-week tour as a Member of the Scientific Delegation to explore the fields of research of mutual interest under an agreement between CSIR and the Polish authorities. On his way back, he visited various research centres in the Federal Republic of Germany under the German Academic Exchange Service.

Shri K. V. Krishna Rao, Scientist, NAL, Bangalore, proceeded to NASA Langley Research Centre, Hampton, Virginia, USA on Oct. 30, 1966 for ten-month training in Aeroelasticity under UN Special Fund Aid Programme.

Dr N. K. Kapoor, CDRI, Lucknow resumed duty on Oct. 31, 1966 after completion of his studies at the Institute für experimentelle Krebsforschung, Heidelberg University, West Germany under the German Academic Exchange Service. He worked on 'Enzymatic studies on purine derivatives in relation to chemotherapy'.

Nominations

Shri G. S. Chowdhury, Director, RRL, Bhubaneshwar—Technical Expert-Member of the State Council for Training in Vocational Trades, Government of Orissa.

Dr M. L. Dhar, Director, CDRI, Lucknow—Member, State Medical Research Council, Uttar Pradesh.

Prof. R. B. Arora, Director, IIEM, Calcutta—Member, (i) Scientific Advisory Board, (ii) Pharmacology Expert Group, and (iii) Advisory Committee on Indigenous Drugs, Indian Council of Medical Research.

Dr G. S. Sidhu, Director, RRL, Hyderabad—Member, Board of Directors of M/s Orgaroma India Private Ltd, Hyderabad.

Dr C. R. Krishna Murti, Scientist, CDRI, Lucknow—Member, Sub-committee on Food Additives, Central Committee of Food Standards, Directorate-General of Health Services, New Delhi.

ISI Nominations

Dr T. Banerjee, Scientist-in-Charge, NML, Jamshedpur—Member, (i) Structural and Metals Division Council and (ii) Methods of Physical Tests Sectional Committee.

Dr S. S. Bhatnagar, Scientist, NML, Jamshedpur—Member, Alloy Steels and Special Steels Sectional Committee.

Honours & Awards

Dr G. S. Sidhu, Director, RRL, Hyderabad has been awarded the Dr K. G. Naik Gold Medal of the M. S. University of Baroda for the year 1966 at its annual convocation held in October, 1966. The Medal is awarded to a scientist in India in the field of Chemistry whose contributions to the published research work have found or are most likely to find applications in developing Indian industry during the period of five years prior to the award.

Shri S.S. Iyer, Scientist, CDRI, Lucknow—Ph.D. (Banaras Hindu University); thesis: *Studies on Vibrio cholerae*

Shri Tribhuwan Kumar Saksena, NPL, New Delhi—Ph. D. (Delhi University); thesis: *Ultrasonic study of rates and equilibria in chemical reactions*

PATENTS

Filed

107270: *Indigenous fluorescent dye-penetrants for surface and sub-surface crack detection* — S. G. N. Swamy, CMERI, Durgapur.

107347: *Improvements in or relating to the preparation of porous carbon electrodes from active carbons for use in air depolarised cells* — A. K. A. Waheed, C. Chakkravarthy, M. A. V. Devanathan & K. S. G. Doss, CECRI, Karaikudi.

107414: *Improvements in or relating to inhibition of corrosion during removal of rust and scale by acid solutions* — K. S. Rajagopalan, N. Subramanyan & M. Sundaram, CECRI, Karaikudi.

107437: *Improvements in or relating to the removal of rust and mill scale from mild steel surface* — K. Balakrishnan, B. Satyanandam, N. V. Parthasaradhy & K. S. G. Doss, CECRI, Karaikudi.

107438: *Improvements in or relating to the cooling systems of internal combustion engines* — G. V. Ramanaiah, CMERI, Durgapur.

107440: *Improvements in or relating to the production of thermosetting resins particularly suitable for moulding and lamination* — M. Venugopalan, M. Krishnan & R. T. Thampy, SRIFIR, Delhi.

107624: *Improvements in or relating to anodic phosphating* — K.S. Rajagopalan, C. Rajagopal & B. Dandapani, CECRI, Karaikudi.

107625: *Improvement in or relating to prevention of tarnishing of copper and copper based alloys*—K. S. Rajagoplan & R. Aravamudhan, CECRI, Karaikudi.

Accepted

96801: *A new method for the improvement in the figure of merit of thermoelectric materials* — K. S. V. Lakshminarasimhan & K. P. Sinha, NCL, Poona.

96710: *A process for the treatment of styrene pitch to obtain a viscous residue and a pungent smelling liquid distillate* — B. C. Mazumdar, CRRI, New Delhi.

97000: *A process for treating cellulosic textile material to impart simultaneously high dry crease recovery, high wet crease recovery and high abrasion/tear resistance*—V. B. Chipalkatti, R. M. Desai, N. B. Sattur & Iftikhar Hussain, SRIFIR, Delhi.

97001: *Improvements in or relating to the electrochemical production of o-nitrophenol to o-aminophenol* — H. V. Udupa, G. S. Subramanian & P. N. Anantharaman, CECRI, Karaikudi.

97002: *Improvements in or relating to the electrolytic reduction of nitrobenzene to p-phenitidine* — H. V. Udupa, G. S. Subramanian & P. Subbiah, CECRI, Karaikudi.

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RN 4212/5

CSIR NEWS

VOL. 16 DECEMBER 15, 1966 : AGRAHAYANA 24, 1888 NO. 23

Bose Memorial Lecture by Dr Atma Ram

Dr Atma Ram, Director-General, Scientific & Industrial Research, delivered the 28th Acharya Jagadish Chandra Bose Memorial Lecture in Calcutta on Nov. 30, 1966. The following are the main points covered in the lecture:

Science must give a quick answer to the people's needs; Causes of misunderstanding between scientists and industrialists; Role of technology; Organization of industrial research; Integration of research and production; Aim of research; The tasks ahead; Borrowing technology; Technology adopted to our needs; and Need of technological competence and competition.

'The Wealth of India' Presented to NRC, Canada

The Council of Scientific & Industrial Research has presented nine of the thirteen volumes of 'The Wealth of India'—an encyclopaedic publication of the Raw Materials and Industrial Products of India, to the National Research Council of Canada (NRC) to mark its Fiftieth Anniversary. Mr B.G. Ballard, President of the NRC, has acknowledged this valuable addition to the Anniversary Collection of their National Science Library.

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STAFF NEWS

Appointments

SARVASHRI B. K. P. SINHA (July 1, 1966), D. BHATTACHARYA, B. N. CHATTERJEE, N. C. DASTIDAR, A. BAGCHI, P. K. BANDYOPADHYA, A.K. ACHARYYA, K. C. JAYPRAKASH, B. P. BHADURI, AMARESH GUPTA & B. D. SARKAR (Aug. 1, 1966), R. N. MUKHERJEE, S. RAMANATHAN & H. ALI (Sept. 14, 1966) & B. D. BALIGA (Oct. 1, 1966)—Scientists. DR A. B. GHOSH DASTIDAR, Pool Officer (July 1, 1966), CMRS Dhanbad.

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RESEARCH PROGRESS

NML, JAMSHEDPUR

Beneficiation studies on a low-grade apatite sample from Singhbhum—Pilot-plant investigations were carried out on four samples of low-grade apatite from Singhbhum district, Bihar, each weighing 20 tons at the instance of the Government of Bihar. Laboratory-scale batch tests on a composite of the four samples (assaying P_2O_5, 17.34% with total oxides 25.0%) indicated that magnetic separation followed by flotation of the non-magnetic fraction produced better grade of concentrate than that obtained by straight flotation. Based on the information obtained in the batch tests, two continuous tests on a pilot-plant scale were run. The first test employed magnetic separation of the classifier overflow followed by flotation, whereas the second employed straight flotation of the classifier overflow. The former produced a final concentrate constituting 28.7 per cent by weight of feed and assaying 41·6 per cent phosphorus pentoxide with less than 4 per cent total oxides and with a recovery of 79·6 per cent phosphorus pentoxide. This met the specifications laid down by the Bihar Government. The recovery of phosphate could be appreciably improved to 90–97 per cent if a final concentrate assaying about 5 per cent total oxides were acceptable to the manufacturers of superphosphate. Side by side with the production of an apatite concentrate, a magnetic concentrate constituting 8 per cent by weight of the mill feed and assaying about 63 per cent iron could also be produced as a by-product after one cleaning.

Based on the results of the investigations a flowsheet was recommended for upgrading this sample, and a list of machinery for upgrading 150 tonnes per day of the apatite was furnished to the Government of Bihar for establishing an apatite beneficiation plant. The apatite concentrate was found suitable for the manufacture of superphosphate to be used as a manure.

CRRI, NEW DELHI

Puzzolana cement concrete pavement—Extensive investigations were carried out on the use of puzzolana as a partial substitute for cement. It was observed that burnt clay puzzolana (reactive surkhi) when used as a partial replacement (20–25 per cent) of plain cement imparted to the resultant puzzolana cement concrete several desirable qualities such as better cohesion, less heat liberation, better water tightness, higher extensibility and reduced modulus of elasticity, higher resistance to chemical deterioration and comparable abrasion resistance (when the lime reactivity of puzzolana was kept higher than 1200 psi) without any loss in strength. The puzzolana cement concrete because of its increased extensibility and reduced modulus of elasticity was expected to be more advantageous than the plain cement concrete when used as a paving material for the following reasons:

(i) Since the temperature and load stresses are reduced with the reduced modulus of elasticity of the concrete, its flexural strength remaining the same or being increased, the design thickness of a pavement can be cut down by about 15 per cent without any loss to the load carrying capacity; (ii) the cost of puzzolana is significantly low as compared to that of cement. Thus, the total economy of using puzzolana cement concrete as a paving material was expected to be 20–25 per cent.

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BRIEFS

Training Course

A 15-day practical training course in canning and preservation of fruits and vegetables was conducted by the Regional Research Laboratory, Jammu during Oct. 7–21, 1966. Fifty candidates were trained and given certificates.

Creative Ability Centre

A Creative Ability Centre for school students has been started in the Birla Industrial & Technological Museum, Calcutta, from November 1966. The main object of the centre is to develop scientific aptitude among the students and to encourage them to prepare models and exhibits on scientific subjects. The Museum provides all possible help in the form of technical instruction, loan of tools, use of machines, etc. required for the training. So far 40 students have joined the centre where various projects on Physics, Astronomy and Biology have been taken up initially.

Oceanography Symposium

A two-day symposium on 'Coastal and Nearshore Oceanography' organized by the Indian National Committee on Oceanic Research and the National Institute of Oceanography was held at the Central Institute of Fisheries Operatives, Ernakulam during Dec. 4–5, 1966. The symposium was inaugurated by Dr K.L. Rao, Minister of State for Irrigation and Power, Govt. of India.

In his inaugural address Dr K. L. Rao expressed his pleasure that the fascinating science of oceanography was coming to occupy a very important place in the scientific activities of the country. He also spoke appreciatively of the efforts taken by the CSIR in organizing this important symposium where oceanographers and engineers had come together to discuss and find ways for solving the problems of sea erosion along the Kerala Coast.

Dr M. S. Krishnan, former Director, NGRI, Hyderabad, in his presidential address gave an account of the Geological Evolution of the Indian Coasts. He traced the various phases of the formation of the coasts of India from the original Gondwana Land, of which India formed a part. He referred to the possible separation of Madagascar from the southwest of India during upper cretaceous period basing his evidence on geological resemblances. The coast formed due to the separation might have faulted down during the later period. The final shape to the West Coast of India, according to him, must have been given during the late Pliocene times. In his concluding remarks, Dr Krishnan stated that it would be necessary to undertake detailed studies of the Pleistocene deposits all over the coasts for gaining an idea of the relative movements of land and sea during the last one million years.

Dr N. K. Panikkar, Director, National Institute of Oceanography and Member-Secretary, Indian National Committee on Oceanic Research welcoming the Chief Guest and the distinguished guests and delegates traced briefly the history of the development of oceanographic studies in the country.

Shri R. Madhavan Nair, Member of the Executive Council, National Institute of Oceanography and Chairman of the Local Organizing Committee for Symposium proposed the vote of thanks.

The inauguration was followed by a scientific session in which as many as 55 papers under the following 5 sections were presented: (i) Waves, tides, currents, sea level variations and storm surges, (ii) Hydrography of shallow waters and estuaries; (iii) Shore processes, beach material and sediment transport; (iv) Nearshore sediments, geomorphology of the Indian coasts and harbour problems; and (v) Biological and miscellaneous studies.

SITRA Conference

SITRA's Eighth Conference on 'Human Relations in Industry' was held at Coimbatore during Aug. 19–20, 1966. The Conference inaugurated by Shri H. V. R. Iengar, Chairman, EID Parry Group, was attended by about 450 delegates from hundred and fifty organizations and representatives from the various Ministries and Government departments.

There were three sessions: (i) Consultant-client relations; (ii) From family to professional managements; (iii) Industry and society.

Study group reports and talks on the following topics were given: The role played by the management consultants towards contributing for the industrial development in the country; Some suggestions for improving the usefulness of consultancy services in industry; The role played by SITRA as a retainer consultant in solving some of the organizational problems among the member mills; Some aspects of training consultancy; Family management and professional management; Impact of industry on society and the contribution of the individual to the development of the society; Changes in social status in Indian society due to industrialization and urbanization; and Prestige in occupations.

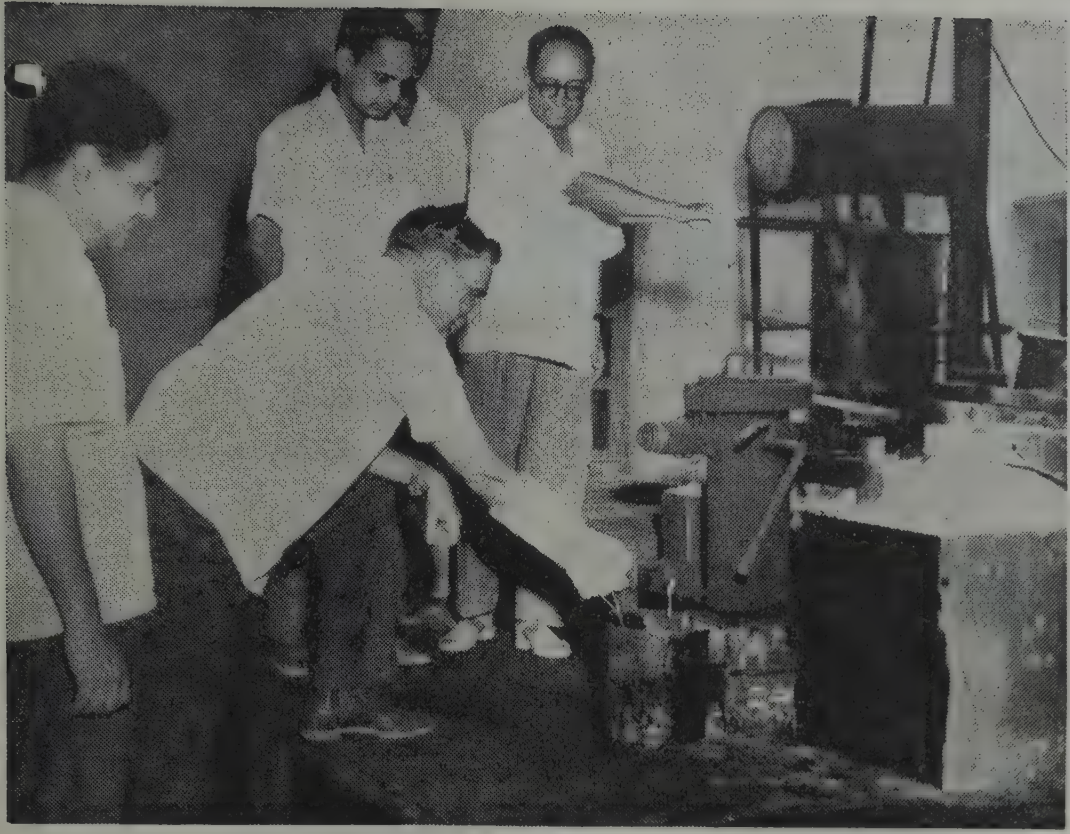
Protected Water Supply for Rural Areas

The Central Public Health Engineering Research Institute, Nagpur, have now standardized type designs for medium-size water treatment plants suitable for small communities. A water treatment plant with a capacity of 3.5 lakh gallons per day is being put up at Vikarabad, a town about 40 miles from Hyderabad, according to the design provided by CPHERI. With the commissioning of this plant, the people of the locality will have the benefits of safe water supply.

Jet Sealing Compound

New formulations for the manufacture of a jet sealing composition have been evolved at CRRI, New Delhi. The composition besides its use as a jet oil resistance sealing compound can be utilized for oil resistant industrial surfacing, flooring, roofing and anti-corrosion surface coating. The composition meets the ISI specifications as regards its penetration, softening point and other properties.

The composition is totally based on indigenously available raw materials, viz. coal-tar pitch, styrene pitch, anthracene oil and lime. The tar pitch may be from any grade of coal carbonized at any temperature for any residual period of time or from any industrial waste. Starting from soft medium pitch to a very hard pitch can be utilized. The styrene pitch which is a source of



CECRI, Karaikudi—Prof. K. S. G. Doss, Director, is seen tapping sodium metal from a 1600 ampere cell at the Institute, marking the completion of one ton production from the cell during its continuous run. The cell was designed, fabricated and operated utilizing indigenously available equipment, raw materials and components (except the graphite anode). A continuous operation of more than 100 days has been achieved

the resinous matter for the composition is a by-product of the synthetic rubber industry. The suitable primer for the composition consists of styrene pitch, tar pitch, tar oil and a volatile fluxing oil.

A melting pot, an electrically heated stainless steel distillation unit with condenser, and a mixing pot with paddle mixer are the important items of the plant and machinery required for putting the process into commercial use. The process of manufacture is very simple. The total capital outlay for a plant capable of manufacturing 150 tons of the compound per annum has been estimated at Rs 1.74 lakh. The cost of the scaling compound works out to be Rs 1.16 per kg.

Parties interested in undertaking commercial development of the process may contact the Secretary, National Research Development Corporation of India, Mandi House, Lytton Road, New Delhi-1.

RSPO Annual Report 1965–66

This is the second report of the Survey & Planning of Scientific Research Unit, now called Research Survey and Planning Organization. The report (pp.23) includes in brief, an account of the work done by the Organization during the period January 1965 to March 1966 under the main heads: Surveys; Study of Specific Problems; Operational Research; International Scientific Collaboration. Some of the major projects/problems which have been under study during the period are: Science in India, Scientific Societies in India, Industrial Research Laboratories, Research Institutes, Indian Universities, Indian Scientific Journals, Agricultural and Animal Husbandry Research Stations, Opinion Survey of Scientists and Technologists, among surveys; Flow of funds to scientific research; Study of expenditure in National Laboratories; Data of growth of science in African and Asian countries; Foreign assistance to scientific research in India, among specific problems; and Trends of scientific research in India. Information on the Council's participation in various bilateral scientific collaboration programmes, and cultural programmes, collaboration with international scientific agencies, have been given under the head 'International Scientific Collaboration'. Besides, it includes information on the staff, administration and functions of the Organization.

STAFF NEWS

Contd from p. 1, col. 1

Dr K. P. Pandya, Scientist, ITRC, Lucknow (Sept. 24, 1966).

Drs R. Haque & J. L. Ghose, Scientists, RRL, Jorhat (Oct. 30 & Nov. 1, 1966, respectively).

Shri Pradhan Dwarka Nath, Scientist, CMRS, Dhanbad (Nov. 14, 1966).

Transfers

Dr D. N. Kanungo, Scientist, CMRS, Dhanbad—NGRI, Hyderabad (July 23, 1966).

Dr S. Guruswamy, Scientist, CMRS, Dhanbad—CECRI, Karaikudi (Sept. 10, 1966).

Deputation

Shri K. P. Krishnamoorthi, Scientist, CPHERI, Nagpur returned from West Germany after 3-month training in Biological Characteristics of Water Quality under European Conditions, during May 17–Aug. 17, 1966, under WHO Exchange Worker's Grant.

Nominations

Shri Dinesh Mohan, Director, & Shri M. H. Pandya, Scientist, CBRI, Roorkee—Member and Alternative Member respectively, Committee to scrutinize the project proposals formulated by the Rural Housing Wings under the aegis of National Buildings Organization, Ministry of Works, Housing & Urban Development, New Delhi.

Dr T. Banerjee, Scientist-in-Charge, NML, Jamshedpur—Member, Executive Council, Central Scientific and Research Services Organization of the Hindustan Steels Limited.

Dr A. B. Chatterjea, Scientist, NML, Jamshedpur—Representative of the Laboratory, Committee on assessment of demand to advise the Committee on norms of coking coal consumption in iron and steel industry, Union Ministry of Mines & Metals, New Delhi.

ISI Nomination

Dr J. K. Sinha, CMRS, Dhanbad—Member, Panel for Timber for Use in Mining.

Honours & Awards

Dr A. B. Kar, Scientist, CDRI, Lucknow has been selected for Dr P. N. Raju's Award for the year 1966 by the Indian Council of

Medical Research for his valuable contributions in the field of Family Planning.

Dr R. L. Thakur, Scientist, CGCRI, Calcutta has been appointed a member of the Editorial Board of the International Journal of High Temperatures and Refractories. The journal has been started recently by the National Society for High Temperatures and Refractories, France.

Shri N. Dhananjayan, NML, Jamshedpur—Ph.D. (Madras University); thesis: *Studies on the structure of electro-deposited manganese.*

Visitors

Doz. Dr Hartmut Bick, Zoologisches Institute, University of Bonn, West Germany—CPHERI, Nagpur (Oct. 17–Nov. 17, 1966).

Dr C. R. Gotellier of Institute Francais der Petrole—RRL, Jorhat (Nov. 7–8, 1966).

Prof. Wiktor Kemula, Department of Inorganic Chemistry, Warsaw, Poland—CECRI, Karaikudi (Nov. 21–24, 1966).

RESEARCH PROGRESS

Contd from p. 1, col. 3

Hence, two experimental road lengths of puzzolana cement concrete were laid down on the National Highway No. 2 near Faridabad and Agra, a few years back and their performance was studied. These stretches were found to be quite satisfactory.

CBRI, ROORKEE

An inexpensive method for soil exploration—A hand-operated bentonite mud-drilling method has been found to be quite fast and simple for adequate soil exploration at nominal cost. The appliance is made of readily available indigenous products. A soil sampler (designed at the Institute) which can extract satisfactorily undisturbed soil samples even from great depths is the principal tool. As an auxiliary tool, dynamic-cone-penetration test with bentonite slurry pumping can be used. Excepting the cone, the other parts of the appliance are the same as those of the mud-drilling equipment and standard penetration test device. Static cone penetration test can also be used, but this requires costly equipment.

Thorough investigation of a site is possible at nominal cost by a judicious use of penetration tests in conjunction with bore-hole study.

PATENTS

Filed

106776: *A new type of fermentation unit* — M. S. Kothari & M. S. Iyengar, RRL, Jorhat.

107439: *Improvement in the production of thermosetting resins particularly suitable for surface coating* — M. Krishnan, M. Venugopalan, Y. N. Sharma & R. T. Thampy, SRIFIR, Delhi.

107626: *A process for the preparation of homatropine and its hydrobromide* — Edward Samson, D. S. Bhakuni & R. P. Rastogi, CDRI, Lucknow.

107724: *A device for exact tracking, particularly suited for sensitivity improvement of medium wave receivers* — H. Singh & S. M. Sharma, CEERI, Pilani.

107725: *A tamping machine* — J. P. Kaushish & S. A. Siddiqi, CBRI, Roorkee.

107726: *Substituted 1,2-Diphenylnaphtho-(2, 1-b) furans and intermediates thereof* — H. P. S. Chawla, P. K. Grover, Nitya Anand, V. P. Kamboj & A. B. Kar, CDRI, Lucknow.

107829: *Modification of myrobalan tanning for its use as a self tanning agent*– D. S. Mukherjee & Y. Nayudamma, CLRI, Madras.

107830: *Improved wedge and split type roof bolt*—B. Singh & B. P. Verma, CMRS, Dhanbad.

107936: *A process for the preparation of high calorie protein-rich pre-cooked, ready-to-eat food products*—M. Srinivasan, O. P. Kapur, K. S. K. Murthy, N.V.R. Iyengar, B. Anandaswamy & P. V. Raju, CFTRI, Mysore.

107982: *Stable castable suspensions of non-plastic alumino-silicate materials and methods of making the same*—A. V. Subrahmanyam & H. P. S. Murthy, NML, Jamshedpur.

107983: *Crack detector solution for non-ferrous metals & alloys* — M. C. Narasimhan, MERDO, Poona.

108081: *Refractory ramming, plastering and patching mixes consisting of kyanite and methods of making and using the same*—M. C. Kundra & H. P. S. Murthy, NML, Jamshedpur.

108145: *A device for intra-ovarian injection in large animals* — S. N. Chatterjee, K. Ahmed & A. B. Kar, CDRI, Lucknow.

USSR

1088976: *Processing of dry ready-to-wet sausage casings from cattle, goat, sheep, pig and other mammalian intestines* — S. K. Barat, CLRI, Madras.

Accepted

97003: *Improvements in or relating to the electrolytic production of high quality fine grade silver powder* — P. B. Mathur & N. Karuppannan, CECRI, Karaikudi.

97004: *Improvements in or relating to the soldering of magnesium and a soldering flux for magnesium* — T. S. Srinivasan & P.B. Mathur, CECRI, Karaikudi.

97005: *Improvements in or relating to the electrodeposition of black chromium plating* — B. A. Shenoi, K. S. N. S. Indira & S. Gowri, CECRI, Karaikudi.

97123: *A safety device for cages of lifts in case of winding rope breakage* — B. Singh & R. K. Prasad, CMRS, Dhanbad.

97190: *Improvements in or relating to extractors for extraction or similar processes* — C. M. Shah & G. Narsimhan, NCL, Poona.

97191: *A glazing machine particularly suited for glazing leather* — T. Ramanathan, CLRI, Madras.

97244: *Toggles for straining leather for drying type A* — K. S. Rao, CLRI, Madras.

97245: *Toggles for straining leather for drying type B* — K. S. Rao, CLRI, Madras.

97444: *An improved vacuum whirler for applying thin and uniform coating of an emulsion on a wafer* — K. S. Balain & Inderjeet Singh, CEERI, Pilani.

98142: *An instrument designated as 'archosolslider' for making calculations of shadow coverages and values of direct solar radiations on surfaces* — K. L. Datta & B. B. Garg, CBRI, Roorkee.

Sealed

90058: *Improvements in or relating to focussing devices for projection lamps in paraboloidal or like shaped reflectors*— B. M. Bishui & J. Prasad, CGCRI, Calcutta.

92976: *Improvements in or relating to the isolation of trilaurin or lauric acid from the fruits of cinnamomum cecidodaphne meissn* — A. Singh, S. N. Srivastava, V. N. Sharma & K. N. Kaul, NBG, Lucknow.

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CSIR NEWS

VOL. 16 DECEMBER 30, 1966 : PAUSA 9, 1888 NO. 24

Meeting

The Annual Meeting of the Geological and Mineralogical Research Committee will be held on Jan. 30, 1967 at 10.30 a.m. at the CSIR Secretariat, Rafi Marg, New Delhi.

International Symposium on Protein Foods & Concentrates

The Council of Scientific & Industrial Research, New Delhi in co-operation with the National Institutes of Health, USA, and the Association of Food Technologists, India, is organizing an international symposium on 'Protein Foods and Concentrates' at the Central Food Technological Research Institute, Mysore (India) during June 27 to July 4, 1967. International agencies like FAO, WHO and UNICEF are being invited to participate as cosponsors.

The Central Food Technological Research Institute has been chosen venue of the symposium in view of the pioneering work it has done over the last decade in the development of protein concentrates and isolates from vegetable raw material.

The emphasis at the symposium will be on processing, consumer acceptance and marketing of protein foods in the newly developing countries with special reference to South and Southeast Asia, as the malnutrition in developing countries is largely due to deficiencies in quantity and quality of protein in the diets of the people. Leading scientists and technologists from various research organizations and experts from industries in different countries of the world specializing in science and technology of protein foods will be presenting papers on the above focal points. Besides, there will be lectures on subjects of interest.

An organizing committee for the symposium has been constituted under the Chairmanship of

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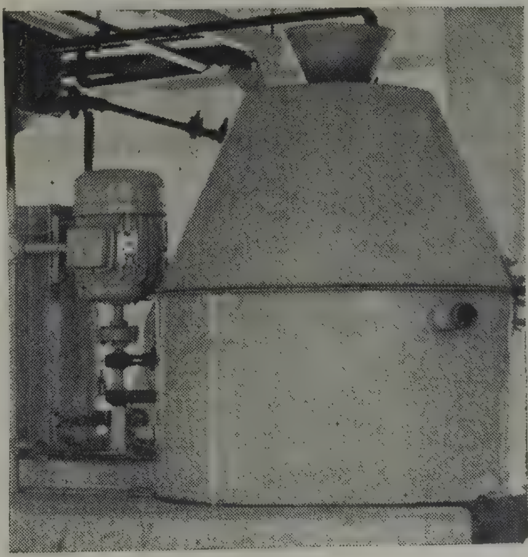
RESEARCH PROGRESS

CSMCRI, BHAVNAGAR

Continuous Centrifuge—A 10 tonnes/day capacity continuous centrifuge has been designed and fabricated. The centrifuge consists of a vertical dewatering basket (9 in. top diam., 18 in. bottom diam. and 16 in. slant height) and a vertical scraper rotated at the rates of 1000 and 900 r.p.m. respectively by V-belts and pulleys mounted on a common shaft. A 5 h.p. electric motor is used as a drive. The overall size of the machine, weighing about 0·75 tonne is (4 ft × 3 ft) base × 4 ft height. The cost of material used in fabricating the centrifuge is estimated at Rs 3,000.

Experiments on dewatering of salt using the centrifuge have shown satisfactory results. The moisture content of salt crystals obtained from it has been found to be 4·07 per cent, which compares favourably with the data on batch centrifuges. The institute is in a position to provide know-how for the design and development of continuous centrifuges of almost all capacities.



CSMCRI, Bhavnagar—The Continuous Centrifuge designed at the Institute

IIEM, CALCUTTA

New Cholera Pattern in India—Systematic phage-typing studies of vibrio strains isolated in cholera epidemics in recent years in South and Southeast Asian countries showed the entry in India in 1964 of a new type of infection caused by El Tor vibrios (limited for decades in the Celebes Island in Indonesia) as against the classical type, *Vibrio cholerae* at four different points, namely, Calcutta, Madras, Surat and Baroda area in Gujarat State and Gurgaon area in the Punjab. By extensive studies with cultures isolated from cholera patients in various parts of India, the progress of El Tor infection in India has been mapped out. It has been found that in less than two years cholera El Tor has spread all over India and progressively eliminated classical cholera from all parts of the country. In 1963 all vibrio strains isolated from cholera cases were *V. cholerae*. Twenty-four per cent of 643 strains isolated in 1964 and 88 per cent of 1692 strains isolated in 1965 were found to be El Tor vibrios, while in 1966 cent per cent of the 635 cultures received from ten States in India were of the El Tor type. Thus, for the first time in centuries it has been observed that cholera of the classical type has disappeared in India. This remarkable changeover demonstrates how one bacterial infection may establish itself as a major human pathogen and in the process cause infections of another well established pathogen to disappear.

Another striking consequence of this change is that Calcutta has now ceased to be the major endemic focus of cholera in the country. The spread of El Tor infection within India has taken place principally

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BRIEFS

Seminar

A group discussion on 'Correlation of physical characteristics of Assam crude oils with local geology' was organized by the Regional Research Laboratory, Jorhat on Nov. 30, 1966. Besides the scientists of the Laboratory, representatives from Oil and Natural Gas Commission, Oil India Ltd, and Assam Oil Co Ltd, also took part in the discussion. A plan for further research on the subject at the Laboratory was discussed. The participants assured their cooperation in the execution of this project.

CMRS Open Days

The Central Mining Research Station, Dhanbad organized open days for the year 1966 on 6th November and 4th December. Demonstrations on about 65 aspects of research and technical programmes covering the areas—mine science, mine technology, mine safety, mine health, and mine engineering were made. Especially the demonstrations on rope testing, explosive testing, flameproof equipment testing, the use of roof-bolts as mine supports, equivalent material model study of mine strata were of special interests to the visitors which included industrialists, mine owners, technologists, mine managers, Government officials, representatives from explosive and mining equipment manufacturers, students and research workers. Technical films were also screened.

Motive Power Gallery

The Birla Industrial and Technological Museum, Calcutta, has thoroughly renovated its gallery on 'Motive Power'. The gallery was re-opened to visitors on Dec. 9, 1966. With a number of static and working models, dioramas and demonstration exhibits, the reorganized gallery seeks to convey to visitors a systematic development of motive power since the earliest times. It includes different types of interesting model of Trevithick's high pressure compact steam engine which is the fore-runner of the modern steam locomotive. Some of the interesting exhibits displayed in the gallery are : Watt's steam engine, Rateau steam turbine, and Hydroelectric power generating set.

The exhibits in the gallery have been presented in such a way that their scientific and technical intricacies are easily understood by the common people. Most of the exhibits have been prepared departmentally.

A brochure entitled 'Motive Power Gallery' was brought out to commemorate the opening of the gallery.

Economizing Road Construction Cost

The Central Road Research Institute, New Delhi, has carried out surveys on the locally available materials (including soil) in Assam area for the construction of Silchar-Aijal Road, at the instance of the Additional Chief Engineer who is constructing the road on behalf of the Director-General, Border Roads. As a result of the investigation, it has been found that the locally available inferior stone and soil can be used as such or after processing in the lower layers of the road pavement without affecting the scientific requirements of design.

The normal cost of construction of the road works out to be Rs 5 lakhs per mile. Use of the material is likely to effect a saving of the order of 30–35 per cent in the cost.

Process for Engineering Bricks

The Central Building Research Institute has successfully developed know-how for the manufacture of engineering bricks which find extensive use in machine foundation, pavements, multistoreyed constructions and flooring of buildings particularly in chemical factories where resistance to acid attack is an important requirement. These types of bricks are not known to be produced in the country and the present demand is met through imports.

Alluvial soil available in the Gangetic plain has been utilized for the purpose. As many as 16,000 bricks made at the Institute were supplied to M/s Sturdia Chemicals Ltd, Rishikesh for use in the foundation of a lime kiln, and 2,000 to CPWD for pavements in airfields. The bricks have been reported to be quite satisfactory.

The plant and machin required for the process are : mixer, de-airing pugmill, cutting table, belt conveyor, friction screw-press, panmill, etc. The total capital outlay required for a plant capable of producing 30 lakhs bricks per annum has been estimated at Rs 5.15 lakhs. The cost of production per 1000 bricks works out to be Rs 150.

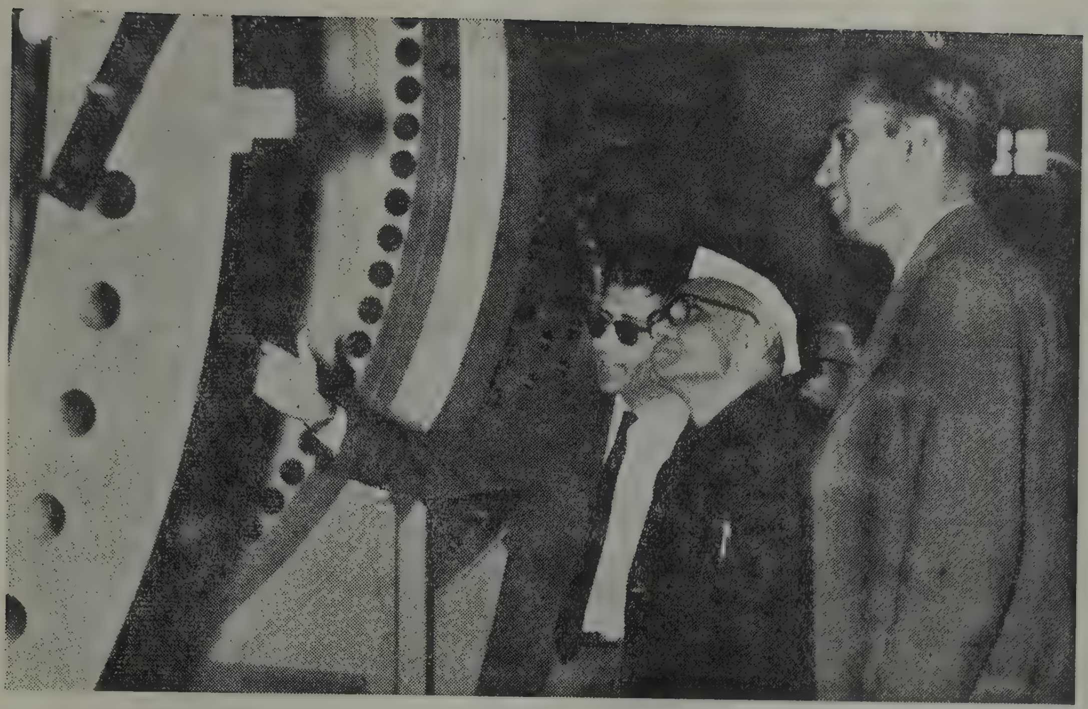
Parties interested in undertaking commercial development of the process may contact the Secretary, National Research Development Corporation of India, Mandi House, Lytton Road, New Delhi-1.

Drafting Manual

The National Aeronautical Laboratory has brought out a drafting manual (pp. 360) useful for designers and engineers. The Manual is divided into two main parts—Drafting Practices, and Design Data. The former includes welding, springs and gears, whereas the latter consists of thirteen sections on selection of materials, fits and limits, fasteners, split cotter pins, turning, milling, drilling and reaming, forging, materials for welding and welding joint design, structurals, metal finishes, standards, and a chapter on design for safety. The manual is very exhaustive in its content and is fully illustrated.

CNS Drugs

This is the title of a symposium volume brought out recently. The publication (pp. xv+367) includes as many as thirty-two papers presented and discussed at the International Symposium on CNS Drugs held at the Regional Research Laboratory, Hyderabad, India during Jan. 24–30, 1966. The papers presented cover diverse aspects of the subject, such as chemistry and pharmacology of new and known drugs, structure-activity relationships, theories on mechanism of action and development of tolerance. As the papers are contributed by the participants from various countries of the world, the compilation presents an up-to-date account of world activity in this field. The publication (price Rs 33.00) is expected to be of interest to every one who has been engaged in research on CNS drugs from whatever point of view and



NAL, Bangalore—Dr Atma Ram, DGSIR *(centre)* being shown the 1 ft trisonic wind tunnel by Dr S. R. Valluri, the Director *(left)* when he visited the Laboratory on Dec. 16, 1966

indeed to all those interested in drugs or drug action.

CLRI, Madras

Messrs Mohammed Fauzy Ibrahim and Mohammed Amin Asmail El Ansary, UAR Nationals joined the Institute on Nov. 5, 1966 for training under the Agreement for Scientific and Technical Cooperation between India and UAR.

Visitors

Prof. Paul M. Newberne, Professor of Nutritional Pathology, Massachusetts Institute of Technology, USA—CFTRI, Mysore (Nov. 17, 1966). He gave a seminar talk on 'Cirrhosis and Aflatoxin Induced Liver Damage in Rat'.

Dr S. R. Sparkes of Imperial College, London (Nov. 9, 1966), Prof. Brohult, President of Royal Academy of Technical Sciences, Stockholm, Sweden (Nov. 18, 1966), Mr Yakovlev Nikolai & Mr Hans D. Doscher, UN Experts and Mr Robert Greenleaf of Ford Foundation (Nov. 23, 1966)—CRRI, New Delhi.

Drs R. Gaunt & J. J. Chart, CIBA, USA — CSIO, Chandigarh (Dec. 1, 1966).

Prof. A. Kezdi, Hungary—CBRI, Roorkee (Dec. 1, 1966). He gave three lectures on (i) Physical properties of soil, (ii) Earth pressure, and (iii) Pile foundations.

Prof. T. R. Seshadri, F.R.S., Emeritus Professor of Chemistry, University of Delhi—NBG, Lucknow (Dec. 4 and 5, 1966). He delivered an illustrated lecture on 'The Recent Advances in Plant Chemistry'.

Dr D. R. Sanadi, Director, Department of Bioenergenetic Research, Retina Foundation, Boston, USA—CSIO, Chandigarh (Dec. 12, 1966).

STAFF NEWS

Appointments

Dr B. S. Rathore, Scientist, NCL, Poona (Sept. 17, 1966).

Shri A. C. Khazanchi, Scientist, RRL, Jorhat (Sept. 19, 1966).

Deputations

Shri V. A. Krishna Murthy, Scientist, CFRI, Jealgora, resumed duty on Nov. 10, 1966 after 12-month stay in West Germany where he visited a large number of research and industrial organizations and acquainted himself with the new techniques of synthesis of hydrocarbons and chemicals under Unesco's Technical Assistance Programme.

Shri K. R. Srikantiah, Scientist, CFTRI, Mysore, resumed duty on Nov. 11, 1966 after completion of studies on 'Enzyme processing to improve the nutritive availability of vegetable protein' for 1 year in Japan under UNICEF fellowship.

Shri A. K. Chakravarti, Scientist, CFRI, Jealgora, resumed duty on Nov. 24, 1966 after a 4-month stay in Poland under the Indo-Polish Cultural Exchange Programme. He studied coal preparation techniques prevalent in Poland and visited a large number of design offices and machinery manufacturing undertakings for mining and coal preparation plants. He also attended an International Symposium on Hydraulic Transportation of Coal held at Katowice, Poland, under the aegis of United Nations.

Shri N. G. Banerjee, Scientist, CFRI, Jealgora, resumed duty on Nov. 25, 1966 after a 4-month deputation to Poland under the Indo-Polish Cultural Exchange Programme. He acquainted himself with the research being carried out there on coal carbonization and preparation of formed coke.

Dr L. D. Kapoor, Scientist, NBG, Lucknow, proceeded to Nepal on Dec. 5, 1966 for a period of three weeks as an Adviser to the Department of Medicinal Plants, Government of Nepal, in connection with the development and utilization of medicinal plants.

Nominations

Dr P. S. Gill, Director, CSIO, Chandigarh — Convener, Study Group on Instrument Technology constituted by the Technical Manpower Assessment Committee, Ministry of Education.

Dr L. V. L. Sastry, Scientist, CFTRI, Mysore—Member, Sub-Committee on Food Additives, Central Committee for Food Standards.

Dr G. S. Sidhu, Director and Dr P. B. Mathur, Scientist, RRL, Hyderabad—Members, Expert Committee constituted by the Director of Medical Services of the Govt of Andhra Pradesh to carryout clinical trials on some selected patients in the Gandhi Hospital, Secunderabad, with N-phenthyl anthranilic acid, an analgesic agent synthesized by the Laboratory.

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Shri P. A. Narielwala, Chairman, Executive Council, and Member of the Board and Governing Body of Council of Scientific & Industrial Research, India.

Further information can be had from Dr B.L. Amla or Dr T.N.R. Rao, Secretaries, International Protein Symposium, Central Food Technological Research Institute, Mysore, India.

RESEARCH PROGRESS

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from the Madras area while the independent spread of cholera El Tor from the other three points of entry has been comparatively limited. The case incidence in Calcutta as well as spread of infection to its neighbouring areas has been progressively decreasing since cholera El Tor entered the area.

The probable cause of this change-over was investigated earlier in IIEM laboratories and one of the principal factors involved was discovered to be the remarkable ability of El Tor vibrios when both are grown together in test tubes as well as in intestine of animals. The precise mechanism of this interaction has now been elucidated by the finding that the two types of vibrios differ in their sensitivity to the action of hydrogen peroxide and El Tor vibrios produce hydrogen peroxide during their growth in concentrations lethal to classical cholera vibrios.

NAL, BANGALORE

Bending of Swept Cantilever Plates—The central portion of thin solid wing of a high speed aeroplane or rocket is made from swept cantilever plates. The combined bending and twisting of this plate under uniform normal loading is an important problem in aeronautics as the ordinary beam theory is not applicable to it. Earlier studies on this problem limited to a two-term approximation did not give satisfactory solution for highly swept plates of high sweep angles nor accurate values for corner stresses in plates of high sweep angles and low aspect ratio.

Hence analysis of swept cantilever plates subjected to normal distributed load and tip moments and shear forces was made, and a complete solution has been obtained in the case of uniform normal load by assuming that the deflections parallel to the chordwise direction can be represented by a power series whose coefficients are functions of spanwise position only. The analysis has been limited to the first three terms in the equation

$$w=f(x)+yg(x)+y^2h(x)$$

where w is the deflection and x and y are the skew coordinates in the spanwise and chordwise directions. By minimizing total potential energy, three-fourth order ordinary differential equations along with six boundary conditions at the tip have been obtained for three functions of x, the remaining six geometric boundary conditions being imposed at the clamped edge of the root. The variations of tip deflection with sweep angles and root bending moment with the chordwise coordinate have been computed. With this three-term approximation method, it has been found that (i) for certain sweep angles, the values of tip-deflections at the trailing edge are improved by as much as 57 per cent while at the leading edge the improvement is about 1 to 2 per cent only and (ii) the deflections and moments can be determined with sufficient accuracy for sweep angles up to 40°. For plates with greater sweep angles, a four-term series is suggested to improve the solution.

PATENTS

Filed

107829 : *Modification of mycrobalan tanning for its use as a self-tanning agent*—D. Mukherjee, K. T. Sarkar and Y. Nayudamma, CLRI, Madras.

108208 : *Combined break-back-cum-lifting arrangement for reciprocating type agricultural mowers and other agricultural implements*—Chandra Mohan and B. S. Devgun, CMERI, Durgapur.

108209 : *Grip-bars for concrete reinforcement*—Z. George, G. S. Ramaswamy, SERC, Roorkee.

Brazil

184908 : *Detoxification process for groundnut cake or protein or any other foodstuff containing aflatoxin*—V. Sreenivasamurthy, S. Srikanta and H.A.B. Parpia, CFTRI, Mysore.

Accepted

88851 : *A process for the production of benzyl alcohol*—H. V. Udupa, G. S. Subramanian, K. Natarajan and K. S. Udupa, CECRI, Karaikudi.

98148 : *Improvements in and relating to a device for the sharpening of razor blades*—M. A. V. Devanathan, V. K. Venkatesan and S. Sarangapani, CECRI, Karaikudi.

98149 : *An instrument for the measurement of soil moisture*—M. Salaruddin and B.V. Khasbardar, Poona.

98152 : *A new composition of dye-penetrants containing indigenous materials for surface and sub-surface crack detection*—S. G. N. Swamy, CMERI, Durgapur.

98155 : *An improved method for the hydration of sulphonated mixtures of vinyl copolymer beads containing 90-95 per cent sulphuric acid and the sulphonated vinyl copolymer beads*—S. L. Kapur and K. Ramakrishnan, NCL, Poona.

98156 : *Preparation of modified copolymers of vinyl monomers in bead form*—S. L. Kapur and K. Ramakrishnan, NCL, Poona.

98159 : *Improvements in or relating to the preparation of lead acid battery plates*—H. V. Udupa, S. Sampath, Ramesh Chandra, S. Palanichamy and C. J. Johny, CECRI, Karaikudi.

98590 : *Thermometer time lag testing machine*—T.D. Bansal, NPL, New Delhi.

98591 : *Improvements in thermometer cage*—T. D. Bansal, NPL, New Delhi.

99657 : *Improvements in or relating to the manufacture of sodium carboxy alkyl starch*—H. R. Chipalkatti and A. S. Jaffal, SRIFIR, Delhi.

NEW PUBLICATIONS

CNS Drugs

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Contains 32 papers covering diverse aspects of CNS drugs, such as chemistry and pharmacology of new drugs and known drugs, structure-activity relationships, theories on the mechanism of action and development of tolerance, presented at the international symposium on CNS Drugs held at the Regional Research Laboratory, Hyderabad during Jan. 24-30, 1966.

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